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SUPERIOR COURT OF THE STATE OF CALIFORNIA
FOR THE COUNTY OF LOS ANGELES
DEPARTMENT 308 HON. CHARLES MC COY, JUDGE

RICHARD BOEKEN,
PLAINTIFF,

VS.

PHILIP MORRIS, INCORPORATED, A CORPORATION; INTERNATIONAL HOUSE OF PANCAKES INCORPORATED, A CORPORATION.

DEFENDANTS.

CASE NO. BC226593

REPORTER'S DAILY TRANSCRIPT OF PROCEEDINGS
FRIDAY, APRIL 6TH, 2001

APPEARANCES:

(FOR PLAINTIFF) LAW OFFICES OF
MICHAEL J. PIUZE
11755 WILSHIRE BLVD.
SUITE 1170
LOS ANGELES, CA 90025

(FOR DEFENDANTS) ARNOLD & PORTER
BY: MAURICE A. LEITER
JOHN CARLTON
777 S. FIGUEROA ST.
44TH FLOOR
LOS ANGELES, CA 90017

LISA C. RIDLEY
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LOS ANGELES, CA 90005

VOLUME 12A OF
PAGES 1864 THROUGH 1966

1864

LOS ANGELES, CALIFORNIA; FRIDAY, APRIL 6TH, 2001
9:00 A.M.
DEPARTMENT 308 HON. CHARLES MC COY, JUDGE

(THE FOLLOWING PROCEEDINGS
WERE HELD IN OPEN COURT OUT
OF THE PRESENCE OF THE JURY:)

THE COURT: WE ARE ON THE RECORD.
MR. LEITER: GOOD MORNING, YOUR HONOR.
WE ARE GOING TO BEGIN BY FINISHING UP THE READING BY DR. UYDESS' TESTIMONY. THERE WAS JUST ONE QUESTION IN A POSSIBLE REDIRECT BY THE PLAINTIFF THAT WE HAVE A DISPUTE ABOUT, AND IF I MAY JUST APPROACH WITH THE TRANSCRIPT, PAGE 96, THE QUESTION

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HIGHLIGHTED IN YELLOW WHICH WE BELIEVE SHOULD BE EXCLUDED CONSISTENT WITH YOUR HONOR'S EARLIER ORDER.

MR. PIUZE: AND THE PORTION THAT HAS ACTUALLY BEEN READ TO THE JURY ALREADY AND NOT EXCLUDED, HE TALKED ABOUT THE REASON THAT HE DECIDED TO LEAVE WAS FLYING BACK ON THE CORPORATE PLANE FROM WHITE PLANES, NEW YORK WITH SCIENTISTS FROM CRAFT AND GENERAL FOODS OR SOME OTHER PLACE AND HE REALIZED ON THAT PLANE TRIP IT WAS THE WRONG PLACE BECAUSE THE PRIME MOTIVATION WAS JUST THAT, MARKET SHARE AND MONEY. I KNOW WHAT THE COURT

1865

RULED. THE COURT DID, THEY HADN'T ASKED THAT THE OTHER PART BE EXCLUDED. IT'S ALREADY BEEN READ TO THE JURY. IT'S SOMETHING ALREADY IN PLAY.

THE COURT: ALL RIGHT, BUT ONCE IS ENOUGH. IF IT TURNS OUT -- OF COURSE, I HAVEN'T LISTENED TO THE REST OF THE CROSS-EXAMINATION. IF IT TURNS OUT THAT THERE'S A MAJOR ATTACK ON THE WITNESS BECAUSE OF BITTERNESS OVER FIRING OR SOMETHING LIKE THAT WHERE -- I MIGHT ALLOW IT.

MR. PIUZE: I DON'T BELIEVE THAT'S THE CASE.

MR. LEITER: I DON'T BELIEVE SO, EITHER.

MR. PIUZE: CAN I SEE THAT FOR A SECOND, SEE IF THERE'S A WAY OF SALVAGING HIS ANSWER.

THIS WOULD BE -- THIS WOULD BE MY PROPOSAL, THAT RATHER THAN USE THAT, IT WOULD JUST BE THIS (INDICATING), THE ANSWER BEING "NICOTINE."

MR. LEITER: SAME ISSUE, YOUR HONOR, HE DOESN'T HAVE ANY EXPERTISE ON MARKET SHARE AND WHAT'S IMPORTANT TO MAINTAIN MARKET SHARE.

THE COURT: NO.

THAT'S NOT TO SAY THAT THAT CAN'T BE AN ISSUE IN THIS CASE BUT IT IS GOING DO HAVE TO TAKE MORE THAN THIS PARTICULAR PERSON TO PUT IT IN ISSUE.

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1866

(THE FOLLOWING PROCEEDINGS WERE HELD IN OPEN COURT IN THE PRESENCE OF THE JURY.)

THE COURT: GOOD MORNING, LADIES AND GENTLEMEN. THE JURY IS WITH US. COUNSEL IS PRESENT AS WELL.

MY COUNSEL TELL ME WE HAVE ALMOST EXACTLY 20 MINUTES LEFT WITH MR. UYDESS, REMEMBER, WE WERE LISTENING TO YESTERDAY.

AFTER THAT'S OVER, WE ARE GOING TO TAKE ABOUT A FIVE-MINUTE BREAK TO SET UP FOR THE NEXT WITNESS WHO WILL BE A LIVE WITNESS.

ALL RIGHT?

GOOD.

COUNSEL, PLEASE.

MR. LEITER: THANK YOU, YOUR HONOR.

GOOD MORNING, LADIES AND GENTLEMEN.

WE ARE PICKING UP WITH THE

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CROSS-EXAMINATION OF DR. UYDESS, TALKING ABOUT THE NOD PROJECT?

MR. GOLDSTEIN: WE ARE ON PAGE 38.

"Q SURE, SURE. AND IF IT WASN'T CONTROLLABLE, AND I WANT TO TALK A LITTLE BIT TO YOU ABOUT WHAT CONTROLLABLE MEANT. IF IT WASN'T CONTROLLABLE THEN YOU COULDN'T USE IT IN THE COMMERCIAL APPLICATION; RIGHT?

1867

"A RIGHT. AND THAT'S EXACTLY WHAT WE HAD TO PROVE IN THE LABORATORY, BEFORE ANYONE WOULD ALLOW US TO DO ANYTHING ELSE, WITH THE PROCESS.

"Q AND IN FACT, YOU GOT TO THE POINT NOT ONLY WHERE YOU PROVED IT IN THE LABORATORY, WHERE YOU GOT IT GOING, BUT YOU BUILT A PILOT PLANT FOR IT; RIGHT?

"A YES.

"Q OKAY. AND A PILOT PLANT, JUST SO THE JURY KNOWS, A PILOT PLANT IS JUST LIKE A -- WHAT WOULD YOU CALL IT, A MINI --

"A SMALL FACTORY.

"Q A SMALL, LIKE A MINIATURE FACTORY.

"A SMALL, NOT THE SIZE OF THE ROOM, BUT IT IS NOT THE SIDE OF THE WHOLE PRODUCTION CENTER.

"Q RIGHT. IT COST A LOT OF -- A LOT OF TIME AND MONEY TO MAKE BUT IT IS NOT THE WHOLE PRODUCTION THING.

"A RIGHT.

"Q AND IN FACT, A LOT OF TIME AND MONEY WAS BEING SPENT ON

1868

THIS PROCESS; CORRECT?

"A IT WAS VERY IMPORTANT TO THE COMPANY.

"Q RIGHT, VERY IMPORTANT TO THE COMPANY.

"NOW, SOME OF THE THINGS THAT HAVE TO BE CONTROLLED, WHEN YOU ARE USING THESE MICROBIAL AGENTS, ARE THE TEMPERATURE AT WHICH THE BACTERIA ARE HELD. WOULD THAT BE ONE?

"A YES.

"Q AND THE TIME, THE TIME COMPONENTS OF HOLDING IT, AND OCCASIONALLY IN THE LABORATORY, YOU WOULD RUN INTO PROBLEMS, WOULD YOU NOT, AND I AM NOT SUGGESTING THAT YOU DIDN'T GET PAST THEM, BUT YOU WOULD RUN INTO PROBLEMS THAT THE -- THE LITTLE --

"A GUYS.

"Q -- PAC MEN, THE LITTLE PAC MEN OR BUGS, THEY WOULD

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START EATING THE NITRATES AND THEY WOULD STOP --

"A AND IN THE DEVELOPMENT OF ANY NEW PROCESS, YOU ALWAYS ARE TRYING TO WORK OUT PROBLEMS THAT COME UP WHILE YOU ARE TRYING TO

1869

FINALIZE THAT PROCESS AND DEVELOP IT, YES.

"Q WHEN THAT HAPPENS, SOMETIMES YOU WOULD WIND UP WITH A BUILD UP OF NITRITES; RIGHT?

"A SOMETIMES, YES.

"Q AND OF COURSE, THAT'S THE LAST THING YOU WANTED TO HAVE HAPPEN, WAS FOR NITRITES TO BUILD-UP?

"A ABSOLUTELY.

"Q OKAY.

"Q SO YOU HAD A NUMBER OF YEARS OF EXPERIMENTATION AND YOU GOT TO THE POINT WHERE YOU WERE IN THE PILOT PLANT WITH IT, AND YOU WOULD GET SOME VERY LOW NITROGEN COMPOUNDS; RIGHT?

"IN OTHER WORDS, YOU WOULD GET IT WORKING, YOU WOULD GET THAT THING WORKING IN THE PILOT PLANT, YOU KNOW, WHERE THE SYSTEM WAS, TO USE YOUR WORD, I THOUGHT IT WAS A GOOD WORD, CASCADING THE WAY YOU WANT IT TO.

"A YES. THE PROCESS IN THE LABORATORY, BEFORE IT WENT TO THE PILOT PLANT, WHEN IT WAS SCALED UP IN

1870

THESE FERMENTER VESSELS, ABOUT THIS BIG, MANY OF THEM, RAN FOR MONTHS AND TYPICALLY THE TARGET WAS ZERO NITRATE, ZERO NITRITE. EVERYTHING GONE TO GAS. AND THERE WAS ZERO, AS FAR AS WE COULD MEASURE.

"Q OKAY, BUT WHILE YOU WERE IN THE LABORATORY, YOU WOULD OCCASIONALLY HAVE PROBLEMS WITH THIS, WHAT I CALL THE START -- THE START-UP AND STOPPING AND YOU CAN'T HAVE THAT IN COMMERCIAL APPLICATION; RIGHT?

"A UNTIL WE COULD LEARN TO CONTROL THAT BETTER IN THE BEGINNING, YES.

"Q NOW, WERE THERE ALSO, AM I RIGHT, DOCTOR, THERE WERE ALSO PROBLEMS, THERE WAS AN ODOR PROBLEM WITH SOME BATCHES OF THE, OF WHAT I WILL CALL THE S.E.L.?

"A UH-HUH

"Q THE STRONGLY EXTRACTED LIQUOR THAT THE MICROBE WOULD BE IN, YOU WOULD HAVE SOME ODOR PROBLEMS WITH THAT, ISN'T THAT RIGHT?

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"A YES, OCCASIONALLY.
"Q AND THE COMPANY
WORKED WITH ITS FLAVOR PERSON, THAT IS

1871

HOWARD SPEILBERG?
"A THE CHIEF FLAVOR
CHEMIST OF THE CORPORATION WORLDWIDE,
HOWARD SPEILBERG.
"Q ALL RIGHT. AND THE
FACT THAT HOWARD SPEILBERG WAS BROUGHT
IN TO TRY TO DEAL WITH THE ODOR
PROBLEM ALSO SHOWED HOW IMPORTANT --
"A HE WASN'T BROUGHT IN
TO DEAL WITH THE ODOR PROBLEM. HE WAS
A NATURAL PART OF THE TEAM THAT WAS
OVER SEEING THE DEVELOPMENT OF THE
PROCESS.
"Q OKAY. BUT ODOR WAS
A PROBLEM AND ONE WAY TO DEAL WITH
ODOR IS TO USE FLAVORS; RIGHT?
"A POSSIBLY, OR TO
DEVELOP THE PROCESS BETTER SO YOU
DON'T --
"Q DON'T HAVE THE
ODORS?
"A -- DON'T HAVE THAT
PROBLEM VERY FREQUENTLY, WHICH IS ONE
OF THE THINGS WE DID DO.
"Q NOW, THE ODOR, PART
OF THE ODOR THAT WAS ASSOCIATED WITH
THE USE OF THIS BACTERIA WAS THE SMELL
OF, LIKE, RANCID BUTTER AND FECAL

1872

MATTER; RIGHT?
"A WELL, MOST PEOPLE
IDENTIFIED IT LIKE SMELLY SOCKS, GYM
SOCKS.
"Q I DON'T KNOW WHICH
IS WORSE.
"A I DON'T KNOW EITHER.
"Q BUT IT WAS NOT A
PLEASANT ODOR; RIGHT?
"A IT COULD BE A FAIRLY
STRONG, KIND OF OLD LOCKER ROOM
ATHLETIC SOCK KIND OF SMELL THAT WAS
IDENTIFIABLE IN CERTAIN KINDS OF
ORGANIC ACIDS THAT CAN BE MADE.
"Q AND THINGS LIKE
ODOR, THEY ARE CONSIDERED PART OF WHAT
WE WOULD CALL SUBJECTIVES; RIGHT?
"A OH, YES. PRODUCT
ACCEPTABILITY CAN BE DEPENDENT UPON
SOMETHING LIKE THAT, WHICH, AGAIN, WE
WERE VERY AWARE OF DURING THIS WHOLE
PROJECT."
MR. LEITER: SKIP TO PAGE 79.
ARE YOU WITH ME?
"Q NOW LET'S TO GO
DR. GULLOTTA.
"THE IDEA OF TESTING SMOKE
FOR A BRAIN WAIVER RESPONSE, THE USE

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1873

OF ELECTROPHYSIOLOGY FOR THIS PURPOSE, THAT WAS -- THAT WAS -- THE GENERAL CONCEPT WAS WELL-KNOWN BY THE SCIENTIFIC COMMUNITY BEFORE DR. GULLOTTA STARTED DOING HIS WORK, RIGHT?

"A AS BRIGHT AS FRANK IS AND TALENTED, HE DIDN'T INVENT THIS WHOLE AREA, NO.

"Q ALL RIGHT. AND I DIDN'T MEAN TO SUGGEST THAT HE DID.

"BUT I AM SURE YOU WOULD EXPECT THAT DR. GULLOTTA WOULD USE THE PRIOR WORK IN THE LITERATURE ON TESTING SMOKE FOR BRAIN WAIVE RESPONSES AS A BASIS FOR GOING FORWARD WITH HIS WORK; RIGHT?

"A YOU ALWAYS WANTED TO KNOW WHAT'S IN THE LITERATURE WHEN YOU START A PIECE OF WORK.

"Q OKAY, GOOD. AND YOU ARE AWARE THAT THERE WAS PUBLISHED LITERATURE ON THIS WHOLE SUBJECT OF BRAIN WAIVE RESPONSE TO SMOKE BACK AT THE TIME DR. GULLOTTA DOING HIS WORK?

"A GENERALLY, THERE WAS SOME. AGAIN, IT HASN'T -- IT WASN'T MY PARTICULAR FIELD, BUT, YES.

1874

"Q IN FACT, THERE WAS A WHOLE -- THERE WAS A WHOLE PUBLISHED INTERNATIONAL SYMPOSIUM ON THE E.E.G. EFFECTS OF NICOTINE BACK IN 1978, WASN'T THERE -- WEREN'T THERE?

"A OH, I DON'T KNOW.

"Q YOU WEREN'T AWARE OF THAT?

"A THERE WAS -- IN 1978? THAT'S NICE. THAT'S GOOD.

"Q YOU WERE NOT AWARE OF THAT AT ALL?

"A NO. FRANK MAY HAVE MENTIONED THAT TO ME AND IT MAY HAVE BEEN ON HIS DESK BUT, AGAIN, NO. THIS IS 20 YEARS AGO, YES.

"Q WHEN DR. GULLOTTA WAS DOING HIS WORK, YOU WERE, DID YOU SAY YOU WERE NEXT DOOR TO HIM OR DID I GET THAT MIXED UP, IT WAS SOMEBODY ELSE?

"A NO. I WAS, AT THAT TIME, JUST BEFORE.

"Q WHERE WERE YOU IN RELATION TO HIM?

"A I WAS ON THE THIRD FLOOR NEXT TO BEHAVIOR RESEARCH WHERE HE STARTED. BUT SOMETIME, AND I DON'T

1875

REMEMBER WHEN, WHEN CAROLINE LEVY, WHO

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WAS AT ONE TIME IN THAT GROUP AND MOVED AND WENT TO NEW YORK, THERE WAS SOME REORGANIZATION OF SPACE AND THERE WERE PEOPLE IN R&D MOVING AROUND LIKE YOU DO, YOU MOVE AROUND OFFICES, WOUND UP ON THE FOURTH FLOOR BECAUSE THEY WANTED HIM TO HAVE A TOTALLY SEPARATE LABORATORY FOR HIS WORK SO THEY BUILT THAT LABORATORY ON THE FOURTH FLOOR RATHER THAN IN WITH THE REST OF THE STUFF ON THE THIRD FLOOR, WHICH IS WHERE DR. DENOBLE WAS AND BILL DUNN AND OTHERS.

"Q AND I THINK YOU SAID THIS MORNING THAT DR. GULLOTTA, IN DOING HIS TESTS, WAS TESTING FOR NICOTINE RESPONSE IN THE BRAIN AND HE WAS ALSO TESTING FOR FLAVOR RESPONSE IN THE BRAIN; RIGHT?

"A YES.

"Q OKAY. SO, FOR EXAMPLE, HE WOULD TAKE A VANILLIN COMPOUND, WHICH WAS A FLAVORANT AND WOULD TEST TO SEE WHETHER PEOPLE HAD A BRAIN WAVE RESPONSE TO VANILLA IN HIS WORK; RIGHT?

"A YES, THEY WANTED AN

1876

OBJECTIVE, TECHNICAL MEASUREMENT, SCIENTIFIC MEASUREMENT THAT THEY COULD CORRELATE TO SOMETHING SAYING, YES, I LIKE IT MORE THAN THE THING I HAD BEFORE. AND IF THEY PUT A LITTLE MORE VANILLIN, I THINK IT'S CALLED --

"Q VANILLIN IS HOW YOU PRONOUNCE IT?

"A VANILLIN IS THE CHEMICAL. IT'S VANILLA.

"Q IT'S VANILLA?

"A THEY WOULD DO IT THAT WAY SO THEY WOULD HAVE A MEASUREMENT, NOT JUST WHAT SOMEONE SAID: HOW MUCH DO YOU LIKE IT? A LITTLE BIT MORE.

"THEY HAD A MEASUREMENT THEY COULD GO BACK TO.

"Q THEY WERE TRYING TO OBJECTIFY IT?

"A YES.

"Q THERE HAD BEEN PUBLISHED LITERATURE ON, FOR EXAMPLE, BRAIN WAVE RESPONSE TO WHAT YOU GET IN A CUP OF COFFEE FROM CAFFEINE; RIGHT?

"A OH, A LOT OF THINGS.

"Q OKAY.

"A SURE.

1877

"Q AND HE WAS LOOKING AT THINGS LIKE CITRUS SMELL AND VANILLA AND NICOTINE AND OTHER THINGS?

"A MENTHOL.

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"Q RIGHT, HE WAS DOING IT ALL, RIGHT, OKAY.

"NOW, AND HE WAS ACTUALLY ABLE, AS I UNDERSTAND YOUR TESTIMONY, TO MEASURE BRAIN WAVE RESPONSES FOR DIFFERENT FLAVORS AND SPELLS; RIGHT?

"A HE WAS ABLE TO MEASURE A RESPONSE HAVING TO DO WITH A NERVE IN THE TONGUE OR THE MOUTH OR THE THROAT BEING STIMULATED BY SOMETHING LIKE THAT, AMONG OTHER THINGS THAT HE WAS LOOKING AT, LIKE NICOTINE, YES.

"Q AND THE INTERPRETATION OF A FLAVOR OCCURS IN THE BRAIN, SO YOU WOULD EXPECT TO GET AN E.E.G. RESPONSE; CORRECT?

"A EVERYTHING WE DO IS INTERPRETED IN THE BRAIN.

"Q OKAY. AND YOU BELIEVED, YOU BELIEVED THAT IT WAS APPROPRIATE OR NOT INAPPROPRIATE FOR DR. GULLOTTA TO BE DOING HIS WORK, DIDN'T YOU?

1878

"A OH, YES, IT WAS, AGAIN, EXCELLENT WORK. FRANK TOOK WHAT WAS KNOWN IN THE LITERATURE AND THIS IS, AGAIN, SOMETHING THAT PHILIP MORRIS DID FREQUENTLY, AND ONE OF THE THINGS I ADMIRED ABOUT THE COMPANY, ONE OF THE THINGS THAT DISAPPOINTED ME ULTIMATELY, WHY I LEFT, HAD THE CAPABILITY TO TAKE WHAT WAS OUT THERE, A TECHNOLOGY THAT WAS AT THE FOREFRONT OF ITS FIELD AT THE DAY, BRING IT IN-HOUSE, AND MAKE A MASSIVE STEP-UP IN A YEAR, BECAUSE THEY HAD THE HORSEPOWER TO DO IT, THE TALENTED STAFF, THE MONEY, THE FACILITIES.

"AND OVER A SHORT PERIOD OF TIME, THEY WOULD TAKE WHAT THE REST OF THE WORLD DID AND WITHOUT THE REST OF THE WORLD KNOWING ABOUT IT, WOULD ALL OF A SUDDEN GO, SWOOP, LIKE THIS AND DO WORK THAT NO ONE ELSE IN THE WORLD, THAT I KNEW, COULD DO.

"Q AND IN FACT, THEY HAD, I THINK YOU SAID, I BELIEVE IT WAS YOU WHO SAID THEY HAD 600 PEOPLE DOING RESEARCH AND DEVELOPMENT WORK OF VARIOUS KINDS?

"A WHEN I FIRST GOT

1879

THERE AROUND 600, 650. IT VARIED A LITTLE BIT.

"YES, THEY HAD, NOT JUST IN R&D, THEY HAD, I DON'T KNOW WHAT THE NUMBER OF PEOPLE IN RICHMOND WAS, THEY HAD A LOT OF TALENTED PEOPLE AT PHILIP MORRIS.

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"Q AND THOSE TALENTED PEOPLE WORKED ON LOTS OF DIFFERENT PROJECTS, LIKE SOME OF THE ONES YOU MENTIONED THIS MORNING, EXPANDED TOBACCO?

"A YES.

"Q RIGHT? AND FILTRATION?

"A YES.

"Q VENTILATION OF FILTERS. AND NODS.

"A YES.

"Q ALL KINDS OF PROJECTS THAT WERE PART OF THE RESEARCH AND DEVELOPMENT EFFORTS AT PHILIP MORRIS.

"A YES.

"Q AND ONE OF THE THINGS THAT YOU MENTIONED, BY THE WAY, WAS RECONSTITUTED LEAF TOBACCO. YOU TALKED ABOUT THAT FOR JUST, JUST A

1880

SMATTERING THIS MORNING. AND I JUST WANT TO CLEAR UP ONE THING ABOUT THAT.

"YOU ARE NOT AWARE, ARE YOU, DOCTOR, OF ANY NICOTINE BEING USED IN THE RECONSTITUTED TOBACCO MANUFACTURING PROCESS, OTHER THAN THE NICOTINE THAT COMES FROM THE TOBACCO ITSELF THAT WAS USED IN THE PROCESS?

"A THAT IS CORRECT. THE ONLY NICOTINE THAT WAS RESIDENT, AS FAR AS I KNOW, OR WOULD EXPECT AT PHILIP MORRIS -- I MEAN, I REMEMBER THAT REPORT BACK A NUMBER OF YEARS AGO WHERE THE SPIKING OF NICOTINE OUT OF A BOTTLE, I MEAN, PHILIP MORRIS WOULD NEVER DO THAT, AS FAR AS I KNOW.

"YES, WHATEVER WAS IN THE LEAVES THAT GETS SWITCHED OUT IN THIS LIQUID EXTRACT AND CONCENTRATED --

"Q YES.

"A -- WAS WHAT WAS PUT BACK, THE AMOUNT, DEPENDING ON HOW THEY RECOMBINED ALL THIS STUFF.

"SO THEY HAD CONTROL OVER HOW MUCH THEY PUT BACK INTO THE SHEETS. SO WITHIN THAT CONTEXT, YES.

"Q SO WITHIN THAT CONTEXT, WHAT YOU ARE SAYING IS THEY

1881

DIDN'T ADD EXTRANEOUS NICOTINE?

"A NO. IT WAS THE NICOTINE THAT WAS ORIGINALLY RESIDENT, WHATEVER LEAF PRODUCTS THEY WERE EXTRACTING.

"Q AS FAR AS YOU KNOW, THESE ALLEGATIONS OF SPIKING ARE NOT TRUE?

"A YES, ABSOLUTELY. AND IT WAS NOTHING I WOULD HAVE EVER

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EXPECTED A COMPANY LIKE PHILIP MORRIS TO EVER THINK OF, LET ALONE DO.

"Q OKAY. AND YOU ARE NOT AWARE OF PHILIP MORRIS EVER USING RECONSTITUTED LEAF TO ADJUST NICOTINE UPWARDS IN ANY COMMERCIAL PRODUCT THAT IS ACTUALLY USED?

"A WELL, I AM NOT SURE WHAT YOU MEAN BY 'UPWARDS.' IT WAS MY UNDERSTANDING THAT SHEET COULD BE USED AND WAS, ON OCCASION, USED TO OBTAIN A CERTAIN TARGETED LEVEL OF NICOTINE IN THE FINAL PRODUCT. AND THAT WAS PART OF THE EFFICACY OF THAT PROCESS. THAT WAS PART OF THE USE OF THE PROCESS.

"IT'S NOT JUST A FILLER, JUST A SPACE FILLER BUT A WAY TO INTRODUCE WHAT YOU WANTED TO INTRODUCE

1882

TO THE PRODUCT.

"Q OKAY. BUT MY QUESTION TO YOU, DOCTOR, IS WHETHER YOU ARE AWARE OF WHETHER PHILIP MORRIS EVER ACTUALLY, IN A COMMERCIAL PRODUCT, WITH A SPECIFIC COMMERCIAL PRODUCT, WHETHER IT EVER ADJUSTED NICOTINE IN SOME WAY BY ADDING NICOTINE TO MAKE IT HIGHER?

"YOU'RE NOT AWARE OF THAT, ARE YOU?

"A AGAIN, I AM NOT SURE HOW YOU ARE USING THE WORD 'HIGHER,' I MEAN, IF YOU LOOK AT THE AMOUNT OF NICOTINE THAT WAS RESIDENT ON THE SHEET AT ANY ONE POINT IN TIME, IT COULD BE VARIED BY THE WAY YOU HANDLE THE PROCESS.

"I MEAN, THERE WERE TIMES WHERE IT COULD BE AT THE LOWER LEVEL AND THERE WERE TIMES WHERE IT COULD BE AT A HIGHER LEVEL.

"WHETHER THE COMPANY USED THAT PROCESS TO INTENTIONALLY ALWAYS MAKE SURE THAT SHEET -- THAT THE SHEET HAD A MASSIVELY HIGH NICOTINE LEVEL TO PUT INTO THE PRODUCT, I DON'T KNOW IF THAT EVER OCCURRED.

1883

"Q OKAY. WELL, LET ME SEE IF -- BECAUSE I AM CONCERNED THAT WHERE WE MAY BE CONFUSED A LITTLE BIT HERE, I JUST WANT TO SHOW YOU A PAGE FROM YOUR DEPOSITION AND MAKE SURE WE ARE TALKING ABOUT THE SAME THING. OKAY?

"A OKAY.

"Q SO WE WILL TAKE A MINUTE, DOCTOR. I AM GOING TO HAND IT TO YOU.

"A THAT'S FINE. THIS IS THE DEPOSITION OF --

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"Q YES. YES. IN THIS CASE.
"A OKAY.
"Q OKAY?
"A YESTERDAY?
"Q RIGHT. THIS IS A VERY TIMELY DEPOSITION. THIS IS A DEPOSITION THAT TOOK PLACE YESTERDAY.
"AND THE QUESTION MAINLY -- IT WAS CONFUSING. BUT THE QUESTION THAT WAS ASKED WAS, THIS IS ON PAGE 44, DOCTOR.
"A OKAY.
"Q I AM ASKING WHETHER YOU ARE AWARE OF WHETHER PHILIP MORRIS

1884

EVER USED R. L. --
"A EXCUSE ME. WHERE ON THE PAGE? WHERE DO I LOOK?
"Q I THINK IT IS AT THE BOTTOM, BUT LET ME TAKE A LOOK.
"A OKAY, DOWN HERE, LINE 23?
"Q RIGHT. AND THE QUESTION IS, I AM ASKING WHETHER YOU ARE AWARE OF WHETHER PHILIP MORRIS EVER USED R. L., THAT'S RECONSTITUTED LEAF; RIGHT, TO ADJUST NICOTINE UPWARD, NOT WHETHER IT COULD BE DONE, WHETHER IT WAS DONE?
"AND YOU ANSWERED: NOT WITH REGARDS TO A SPECIFIC PRODUCT IN WHICH THAT WAS DONE.
"NOW, IS THAT ESSENTIALLY -- YOU ARE NOT AWARE OF ANY SPECIFIC PRODUCT IN WHICH --
"A RIGHT, WHICH IS KIND OF WHAT I SAID.
"Q RIGHT.
"A I AM NOT AWARE OF WHETHER PHILIP MORRIS EVER LOADED UP THE SHEET WITH A TREMENDOUS AMOUNT OF NICOTINE AND INTRODUCED IT INTO A MARKETING PRODUCT, MARKETABLE PRODUCT.

1885

"I MEAN, THEY WOULDN'T HAVE DONE THAT FOR A LOT OF REASONS, BUT, NO.
"Q OKAY. YOU MENTIONED THE WORD 'RATOONING'" IN CONNECTION WITH RATOONING, R-A-T -- JUST HOLD IT UP THERE. JUST PUT IT UP ON THE JUDGE'S DESK.
"AND I THINK YOU EXPLAINED THAT RATOONING IS WHERE YOU CUT OFF THE LEAF BEFORE IT IS FULLY GROWN, YOU CUT OFF THE PLANT?
"A YOU CUT THE PLANT OFF FAIRLY CLOSE TO THE GROUND, MAYBE JUST ABOVE THE BOTTOM FEW LEAVES.
"Q OKAY. AND I JUST

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HAD A QUESTION FOR YOU ON RATOONING.
"NOW, AM I RIGHT, DOCTOR,
JUST SO WE CAN GET BY THIS AREA, YOU
DON'T KNOW WHETHER ANY LEAVES PRODUCED
THROUGH RATOONING EVER GOT INTO
PRODUCTION IN ANY COMMERCIAL CIGARETTE
AT PHILIP MORRIS?
"A NO, I DON'T. I WAS
ONLY AWARE OF IT DURING THE RESEARCH
PHASE OF THOSE PROJECTS.
"Q AND THE RESEARCH
PHASES, THEY WERE SIMPLY LOOKING AT

1886

VARIOUS ASPECTS OF WHAT HAPPENS WHEN
YOU RATOON TOBACCO; RIGHT?
"A THEY WERE DOING
FIELD EXPERIMENTS TO LOOK AT A NUMBER
OF CRITERIA, ONE OF WHICH WAS NICOTINE
PRODUCTION IN THE NEW LEAVES THAT GREW
UP AFTER.
"Q SURE. BECAUSE WHEN
YOU CUT THEM OFF LIKE THAT, A LOT OF
THINGS CHANGE. SUGAR CAN CHANGE;
RIGHT?
"A OH, A NUMBER OF
THINGS CAN CHANGE.
"Q RIGHT, SO --
"A THEY WERE LOOKING AT
A LOT OF THINGS.
"Q THEY WERE LOOKING AT
EVERYTHING THAT CHANGES WHEN YOU DO
THAT?
"A I AM NOT SURE IT WAS
EVERYTHING, BUT THEY HAD CERTAIN
TARGETED COMPONENTS, SUGARS, CERTAIN
WAX, FLAVORANTS AND NICOTINE WAS HIGH
ON THE LIST.
"Q AND THAT WAS IN AN
EXPERIMENTAL PHASE, AND AS FAR AS YOU
KNOW, NEVER USED IN COMMERCIAL
PROCESS?

1887

"A AS FAR AS I KNOW, IT
WAS JUST BEING EXPLORED FOR
POSSIBILITIES."
MR. LEITER: YOUR HONOR, I BELIEVE THAT
COMPLETES THE READING OF THE CROSS-EXAMINATION.
THE COURT: VERY WELL.
MR. GOLDSTEIN: PAGE?
MR. PIUZE: 95.
"Q YOU WERE ASKED ABOUT
SOME DOCUMENTS, ONE DOCUMENT, THE
FIRST ONE THAT MR. HEIM DISCUSSED WITH
YOU WAS THIS DOCUMENT DATED JULY 23,
'80, FROM DENOBLE, DUNN, OSDENE AND
RYAN TO DR. SELIGMAN.
THE BOTTOM-LINE CONCLUSION
OF THIS DOCUMENT IS THAT NICOTINE IS A
REINFORCER BUT IT IS NOT ADDICTIVE;
RIGHT?
"A THAT'S WHAT'S STATED

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HERE.
"Q IS THIS DOCUMENT CONSISTENT WITH ATTITUDE AND DISCUSSIONS OF SCIENTISTS ON THE SUBJECT OF ADDICTION DURING YOUR 11 YEARS WITH PHILIP MORRIS OR IS IT INCONSISTENT WITH WHAT YOU HEARD?
"A I AM SORRY, WOULD YOU REPEAT THAT ONE TIME.

1888

"Q YES.
"I AM ASKING YOU IF THIS DOCUMENT, WHICH SAYS NICOTINE IS NOT ADDICTIVE, IS MERELY A REINFORCER, IS CONSISTENT WITH WHAT SCIENTISTS WERE SAYING IN YOUR PRESENCE, IN YOUR DISCUSSIONS WITH THEM, IN MEETINGS YOU ATTENDED DURING YOUR 11 YEARS AT PHILIP MORRIS?
"A NO. NOT TOTALLY, NO."
MR. PIUZE: MAY I PLEASE GO TO 97 AND START AT 3.
"Q DID THE NOD PROJECT, FAIL?
"A NO. AS FAR AS I KNOW, IT WAS TECHNICALLY SUCCESSFUL, MAY HAVE NEEDED A FEW THINGS. THEY COULD HAVE IMPROVED IT EVEN FURTHER. BUT AS FAR AS WHAT I WAS TOLD BY MY MANAGEMENT, OUTSIDE CONTRACTORS WHO WERE EXPERTS, OTHER PEOPLE AT PHILIP MORRIS, CHIEF ENGINEERS, IT WAS SUCCESSFUL.
"Q I BELIEVE YOU MENTIONED SOMETHING ABOUT THE R&D HEADQUARTERS IN SWITZERLAND.
"NOW, WAS INBIFO IN GERMANY

1889

ALSO CONSIDERED TO BE R&D HEADQUARTERS OR WAS THAT SOMETHING ELSE?
"A THAT WAS TOTALLY DIFFERENT.
"Q NOW, THE LETTER THAT MR. HEIM REFERRED TO FROM DR. HELMUT GAISCH DATED SEPTEMBER 12, '83, DR. GAISCH WAS STILL WITH THE R&D SECTION IN NEUCHATEL, SWITZERLAND; IS THAT CORRECT?
"A YES.
"Q WAS THERE, WAS THERE A VALID, BASED ON EVERYTHING THAT YOU LEARNED DURING YOUR TENURE AT PHILIP MORRIS, WAS THERE A VALID SCIENTIFIC REASON FOR KILLING THE NOD PROJECT?
"A NOT THAT I WAS AWARE OF
"Q WAS THERE A VALID, SCIENTIFIC REASON FOR KILLING DR. GULLOTTA'S RESEARCH OR SENDING IT TO EUROPE?

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"A SCIENTIFIC REASON?
"Q YES.
"A NOT THAT I WAS AWARE OF.
"Q AND WAS THERE A VALID SCIENTIFIC REASON FOR KILLING

1890

DR. DENOBLE'S RESEARCH?
"A NO, NOT THAT I WAS AWARE OF.
"Q NOW, TOWARD THE END OF MR. HEIM'S QUESTIONS, YOU WERE HAVING A DISCUSSION ABOUT THE GENERAL LEVEL OF SCIENCE AT PHILIP MORRIS IN TERMS OF THE QUALIFICATIONS OF THE SCIENTISTS WHICH YOU SAID WAS VERY HIGH. AND THEY MADE ADVANCES AND THEN YOU SAID, QUOTE, WHERE THEY MADE THESE ADVANCES, QUOTE, WITHOUT THE REST OF THE WORLD KNOWING ABOUT IT, END QUOTE. WHAT DID YOU MEAN BY THAT?
"A WHEN PHILIP MORRIS DECIDED TO UTILIZE THE CURRENT TECHNOLOGY AND EXPLORE IT FOR POSSIBLE USE INSIDE, IT WANTED TO ELEVATE, RAISE THE LEVEL OF SCIENCE AND QUALITY ASSOCIATED WITH THAT SO IT COULD HAVE A CORPORATE ADVANTAGE. AND SOMETIMES WE'D USE THAT WORK TO DEVELOP NEW AND NOVEL INFORMATION WHICH IT DIDN'T PARTICULARLY WANT ANYONE ELSE TO KNOW ABOUT. SO IT KEPT IT --
"Q KEPT IT SECRET?
"A KEPT IT SECRET, YES."

1891

MR. PIUZE: AND EVERYONE WILL BE HAPPY TO KNOW, THAT'S THE END OF THAT READING, YOUR HONOR.
THE COURT: LADIES AND GENTLEMEN, WE ARE GOING TO TAKE FIVE MINUTES. JUST GO OUT AND TAKE A HALLWAY BREAK. AND SET UP IN HERE FOR THE NEXT WITNESS AND WE WILL GET STARTED AGAIN.
THANK YOU VERY MUCH.

(THE FOLLOWING PROCEEDINGS WERE HELD IN OPEN COURT OUT OF THE PRESENCE OF THE JURY:)

MR. LEITER: YOUR HONOR, ONE VERY QUICK PROBLEM, ONE OF THE DOCUMENTS THAT MR. PIUZE WANTS TO USE WITH THE NEXT WITNESS, WE HAVE NO OBJECTION TO ALL THE DOCUMENT EXCEPT WE WERE JUST TOLD FOR THE FIRST TIME THAT THERE IS A LAST PAGE WHICH THEY BELIEVE IS PART OF THE DOCUMENT.
WE HAVE NO IDEA WHETHER IT'S PART OF THE DOCUMENT OR NOT.
WE DON'T WANT THEM TO OFFER THE DOCUMENT WITH THE LAST PAGE, UNTIL WE HAVE AN OPPORTUNITY TO CONFIRM THAT IT'S PART OF THE DOCUMENT.
THE COURT: ALL RIGHT. HOLD OFF ON THAT

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AND I WILL GIVE YOU A FAIR OPPORTUNITY TO DO THAT.
IS HE GOING TO BE WITH US OVER THE
AFTERNOON?

1892

MR. PIUZE: PROBABLY NOT, BUT THAT PAGE
IS NEVER GOING TO BE SHOWN, MENTIONED OR IN ANY WAY
MENTIONED.
MR. LEITER: BUT HE WANTS TO PUT IT INTO
EVIDENCE.
MR. PIUZE: THAT'S NOT TRUE.
THE COURT: DON'T MOVE IT INTO EVIDENCE
AT THIS POINT IN TIME.
MR. PIUZE: EXACTLY.
THE COURT: I WILL TAKE CARE OF IT LATER.
BRING THE JURY IN, PLEASE.

(THE FOLLOWING PROCEEDINGS
WERE HELD IN OPEN COURT IN
THE PRESENCE OF THE JURY.)

THE COURT: THANK YOU.
OUR JURY PANEL IS WITH US. COUNSEL
ARE PRESENT AS WELL.
NEXT WITNESS, PLEASE.
MR. PIUZE: DR. NEAL BENOWITZ IS THE NEXT
WITNESS FOR THE PLAINTIFF.

NEAL BENOWITZ M.D.,
CALLED AS A WITNESS BY THE PLAINTIFF, WAS SWORN
AND TESTIFIED AS FOLLOWS:
THE CLERK: YOU DO SOLEMNLY STATE THE

1893

TESTIMONY YOU MAY GIVE IN THE CAUSE NOW PENDING
BEFORE THIS COURT, SHALL BE THE TRUTH, THE WHOLE
TRUTH AND NOTHING BUT THE TRUTH, SO HELP YOU GOD.
THE WITNESS: YES, I DO.
THE CLERK: THANK YOU.
THE COURT: PLEASE STATE YOUR NAME FOR
THE RECORD.
THE WITNESS: NEAL BENOWITZ.
THE CLERK: SPELL YOUR LAST NAME, SIR.
THE WITNESS: B-E-N-O-W-I-T-Z.

DIRECT EXAMINATION

BY MR. PIUZE:
Q. SO YOUR NAME IS BENOWITZ?
GOOD MORNING.
A. GOOD MORNING.
Q. YOU ARE A MEDICAL DOCTOR?
A. YES.
Q. ARE YOU EMPLOYED?
A. YES.
Q. WHO IS YOUR BOSS?
A. I AM AN EMPLOYEE OF THE U.C.
SAN FRANCISCO, UNIVERSITY OF CALIFORNIA,
SAN FRANCISCO. I WORK AT THE SAN FRANCISCO GENERAL
HOSPITAL, WHICH IS A TEACHING HOSPITAL OF U.C.
SAN FRANCISCO.
Q. ARE YOU EMPLOYED BY THE REGENTS OF

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1894

THE UNIVERSITY OF CALIFORNIA?
A. YES.
Q. ARE YOU A MEDICAL PROFESSOR?
A. YES.
Q. HOW LONG HAVE YOU BEEN A MEDICAL PROFESSOR?
A. I HAVE BEEN ON THE U.C. FACULTY SINCE 1974. I STARTED AS AN ASSISTANT PROFESSOR. I HAVE BEEN A FULL PROFESSOR PROBABLY FOR THE LAST 15 YEARS IN MEDICINE, PSYCHIATRY AND BIOPHARMACEUTICAL SCIENCES.
Q. SO YOU ARE A FULL PROFESSOR IN THREE DIFFERENT AREAS?
A. YES.
Q. DO YOU KNOW SOMETHING ABOUT NICOTINE?
A. YES. MOST OF MY RESEARCH OVER THE PAST 25 YEARS HAS RELATED TO STUDYING THE EFFECTS OF NICOTINE ON PEOPLE, STUDYING NICOTINE ADDICTION, STUDYING HOW NICOTINE INFLUENCES SMOKING BEHAVIOR, STUDYING THE EFFECTS OF NICOTINE AND SMOKING ON THE HEART AND OTHER ILLNESSES RELATED TO SMOKING.
Q. WE READ SOME TESTIMONY HERE FROM A WITNESS THE JURY NEVER SAW. AND ONE OF THE TERMS THAT WAS USED IN THE TESTIMONY WAS C. V. DO YOU KNOW WHAT A C. V. IS?
A. YES.
Q. WHAT'S A C. V.?

1895

A. IT'S A CURRICULUM VITAE WHICH IS A SUMMARY OF ONE'S EDUCATION AND TRAINING, ONE'S ACTIVITIES, LECTURES, CONFERENCES, AWARDS, CONSULTATIONS, PUBLICATIONS, BOOK CHAPTERS, ET CETERA.
Q. SO FOR SOME OF US NOT IN THE ACADEMIC WORLD OR -- FOR SOME OF US, SAYING "RESUME" MIGHT BE A SHORTHAND FOR SAYING "C. V."
A. IT'S THE SAME.
Q. THE SAME.
NOW, WE HAVE ALSO HEARD, I THINK MAYBE FROM A COUPLE LIVE WITNESSES THAT HAVE BEEN HERE, AT LEAST ONE, AND WE HAVE HEARD FROM SOME OF THIS TESTIMONY THAT'S BEEN READ, THE TERM "PEER REVIEW."
DO YOU KNOW WHAT THAT MEANS, OBVIOUSLY?
A. YES.
Q. PLEASE EXPLAIN TO THE JURY.
A. WELL, WHEN ONE PUBLISHES RESEARCH, ONE WRITES AN ARTICLE TALKING ABOUT WHY ONE DID THE RESEARCH, THE METHODS AND WHAT THEY FOUND OR WHAT IT MEANS. AND WHEN YOU SUBMIT THAT TO A JOURNAL FOR PUBLICATION, IT GETS SENT OUT TO OTHER RESEARCHERS, OTHER SCIENTISTS, USUALLY TWO OR THREE. AND THEY ARE PEER REVIEWERS. AND THEY REVIEW THE PAPER AND THEY DECIDE IF THE WORK IS VALID, IF IT'S IMPORTANT, IF IT SHOULD BE

1896

PUBLISHED.

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AND SO THAT'S A PEER REVIEW PROCESS THAT MAINTAINS THE QUALITY OF THE RESEARCH THAT IS PUBLISHED.

Q. SO JUST AS AN EXAMPLE, IF A SCIENTIST WANTED TO WRITE SOMETHING FOR SOME NON-PEER REVIEWED JOURNAL, SOMETHING THAT WASN'T PEER REVIEWED, AND THE SCIENTIST SENT IT IN TO A PUBLISHER SOMEPLACE, IT MIGHT GET PUBLISHED AND IT MIGHT BE BADLY FLAWED WORK?

A. YES.

Q. IN THE PEER REVIEW PROCESS, BEFORE THE SCIENTIST CAN PUBLISH SOMETHING, HE'S GOT A BUNCH, HE OR SHE HAS A BUNCH OF HIS OR HER COLLEAGUES LOOKING OVER THEIR SHOULDER SAYING, WELL, MAYBE YOU WANT TO CHANGE THIS COMA OR MAYBE THIS ISN'T EXACTLY RIGHT OR MAYBE YOU WANT TO JUMP OVER THESE HURDLES BEFORE YOU GET THIS PUBLISHED SO IT IS A REALLY EXCELLENT WORK?

A. IT'S NOT SO MUCH COMMAS. IT REALLY HAS TO DO WITH WAS THE RESEARCH DESIGNED PROPERLY, ARE THE CONCLUSIONS VALID, IS THE INTERPRETATION THE APPROPRIATE INTERPRETATION.

Q. ON THE ISSUE OF NICOTINE AND ON THE ISSUE OF ADDICTION TO NICOTINE, HAVE YOU PUBLISHED?

A. YES.

Q. DO YOU WANT TO GIVE THE JURY JUST A ROUND NUMBER OF HOW MANY TIMES YOU PUBLISHED ON

1897

THAT SUBJECT?

A. WELL, I HAVEN'T COUNTED THAT, BUT I HAVE PUBLISHED 350 PAPERS THAT INCLUDE RESEARCH PAPERS, REVIEW ARTICLES, ET CETERA. THE VAST MAJORITY OF THAT INVOLVES NICOTINE SMOKING. NOT ALL, BUT PROBABLY TWO-THIRDS OR THREE-QUARTERS OF IT.

Q. HAS TO DO WITH --

A. NICOTINE OR TOBACCO RELATED ISSUES.

Q. HOW DID YOU FIRST GET INVOLVED IN NICOTINE OR TOBACCO RELATED ISSUES, PLEASE?

A. WELL, MY BASIC TRAINING IS INTERNAL MEDICINE. I WAS INTERESTED IN THE SPECIALTY OF CLINICAL PHARMACOLOGY, WHICH IS THE SPECIALTY OF MEDICINE THAT DEALS WITH THE EFFECTS OF DRUGS ON PEOPLE, DRUG DEVELOPMENT, NEW DRUGS, AS WELL AS DRUGS OF ABUSE AND DRUG OVERDOSES, THE WHOLE GAMUT.

IN MY TRAINING, I WAS STUDYING MOSTLY DRUGS THAT EFFECT THE HEART AND BLOOD VESSELS AND CIRCULATION.

ONE OF THE FIRST JOBS THAT I HAD WHEN I FINISHED WAS TO STUDY MARIJUANA, THE EFFECT OF MARIJUANA ON THE HEART.

MY PRACTICE IS MOSTLY CARDIOLOGY, CARDIOVASCULAR DISEASE. AND AFTER A FEW YEARS OF STUDYING MARIJUANA, I DECIDED THAT THE REAL HEALTH ISSUES FOR SMOKED DRUGS WERE NOT MARIJUANA, THE REAL HEALTH ISSUE, BECAUSE THAT WAS AND STILL IS

1898

THE MAJOR PREVENTABLE CAUSE OF HEART DISEASE, SO IN ABOUT 1975, I SHIFTED MY RESEARCH AND I DECIDED I WOULD TRY TO UNDERSTAND NICOTINE.

NOW, AT THAT TIME, THERE WAS VERY

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LITTLE RESEARCH DONE ON WHAT NICOTINE DID TO THE BODY.

AND SO WE SYSTEMATICALLY GAVE PEOPLE SMALL DOSES OF NICOTINE, STUDIED HOW THE BODY WOULD HANDLE IT, STUDY WHAT HAPPENED, STUDY HOW CONTROLLED SMOKING BEHAVIOR, AND I HAVE BEEN DOING RESEARCH ON THAT FOR THE LAST 25 YEARS, ON THE QUESTION OF NICOTINE AND IT'S IMPORTANCE.

Q. OKAY.

NOW, BACK TO THE CONCEPT OF PEER REVIEW. DO SCIENTISTS OR JOURNALS WHERE SCIENTISTS WANT TO PUBLISH COME TO YOU AND SAY, DR. BENOWITZ, WILL YOU BE ONE OF OUR REVIEWERS FOR THIS PAPER TO MAKE SURE THAT THE RESEARCH WAS SET UP OKAY?

A. YES, VERY OFTEN.

Q. JUST GIVE --

A. PROBABLY ONCE A WEEK.

Q. ONCE A WEEK. OKAY.

A. I CAN'T HANDLE THEM ALL.

Q. HOW MANY DIFFERENT KINDS OF SCIENTIFIC JOURNALS HAVE YOU ACTED AS A PEER REVIEWER FOR?

A. I HAVE NOT COUNTED THEM BUT PROBABLY 50 OR 60.

1899

Q. HOW MANY TIMES DO YOU THINK YOU HAVE BEEN -- I AM NOT TALKING ABOUT YOUR ARTICLES NOW, YOU HAVE TOLD US TWO-THIRDS OR THREE-QUARTERS OF 350 ARTICLES HAVE TO DO WITH NICOTINE AND TOBACCO, TALKING ABOUT OTHER PEOPLE'S, HOW MANY TIMES DO YOU THINK YOU HAVE BEEN A PEER REVIEWER FOR OTHER'S ARTICLES, SCIENTIFIC WORKS ON TOBACCO, NICOTINE AND ADDICTION, PLEASE?

A. SEVERAL HUNDREDS.

Q. HAVE YOU BEEN INVOLVED WITH THE SURGEON GENERAL OF THE UNITED STATES OF AMERICA AS FAR AS TOBACCO AND NICOTINE RELATED ACTIONS?

A. YES.

Q. EXPLAIN.

A. WELL, THE SURGEON GENERAL, EVERY YEAR OR SO, PUTS OUT A REPORT TO CONGRESS AND TO THE COUNTRY ON ASPECTS OF SMOKING AND HEALTH. THIS STARTED WITH THE 1964 FIRST SURGEON GENERAL'S REPORT THAT LINKED SMOKING WITH LUNG CANCER.

I HAVE BEEN INVOLVED WITH PROBABLY FIVE OR SIX REPORTS.

THE WAY THESE WORK IS THAT SCIENTISTS ARE ASKED TO ACCUMULATE THE CURRENT STATE OF KNOWLEDGE AND TO PREPARE A SUMMARY DOCUMENT WHICH IS THEN REVIEWED BY OTHER SCIENTISTS ANE ULTIMATELY REVIEWED BY AND PRESENTED BY THE SURGEON GENERAL TO CONGRESS.

I HAVE BEEN INVOLVED IN WRITING

1900

SECTIONS OF THE SURGEON GENERAL'S REPORTS ON PASSIVE SMOKING, SMOKING IN WOMEN, SMOKING AND YOUTH, ETHNIC DIFFERENCES IN CIGARETTE SMOKING.

THE ONE I WAS MOST INVOLVED IN, HOWEVER, WAS THE 1988 SURGEON GENERAL'S REPORT ON NICOTINE ADDICTION WHERE I WAS ONE OF THE SCIENTIFIC EDITORS. THERE WERE FOUR EDITORS WHO

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BASICALLY WERE RESPONSIBLE FOR PUTTING TOGETHER THE ENTIRE DOCUMENT. AND SO I SERVED IN THAT CAPACITY.

Q. OKAY. SO THE 1988 SURGEON GENERAL'S REPORT ON SMOKING AND ADDICTION, YOU WERE ONE OF THE FOUR SCIENTIFIC EDITORS OF THE WORK?

A. YES.

Q. DID YOU WRITE SOME OF IT YOURSELF?

A. A LOT OF IT.

Q. HAVE YOU BEEN INVOLVED WITH VARIOUS SUCCEEDING SURGEONS GENERAL AS ONE HAS COME AND GONE AND THE NEXT ONE HAS COME AND GONE AND THE NEXT ONE HAS COME AND GONE ON THE ISSUE OF SMOKING AND NICOTINE AND HEALTH?

A. YES. AS I SAID, I WROTE THE ADDICTION SECTIONS FOR THE REPORTS ON YOUTH SMOKING, ETHNIC DIFFERENCES AND SMOKING AND WOMEN. THOSE WILL BE THREE REPORTS SINCE THE '88 REPORT.

Q. OKAY, SO WERE DIFFERENT SURGEONS GENERAL?

A. I DON'T REMEMBER WHICH -- IF THEY WERE ALL DIFFERENT SURGEONS GENERAL. BUT THERE

1901

WERE A NUMBER OF TIMES.

Q. HAVE YOU CONSULTED WITH OTHER BRANCHES OF THE UNITED STATES GOVERNMENT IN REGARD TO SMOKING TOBACCO AND NICOTINE AND ADDICTION, PLEASE.

A. YES.

Q. EXPLAIN.

A. I HAVE WORKED WITH THE ENVIRONMENTAL PROTECTION AGENCY ON THEIR ASSESSMENT OF THE RISKS OF PASSIVE SMOKING. I HAVE WORKED WITH THE OCCUPATIONAL SAFETY HEALTH ADMINISTRATION WHEN THEY WERE DEALING WITH THE QUESTION OF WORKPLACE REGULATION OF SMOKING. AND I WAS ONE OF THEIR EXPERTS TALKING ABOUT HOW MUCH PEOPLE ARE EXPOSED.

I WORKED WITH THE FOOD AND DRUG ADMINISTRATION WHEN THEY CONSIDERED WHETHER NICOTINE SHOULD BE CALLED A DRUG AND WHETHER IT SHOULD BE REGULATED.

AND I HAVE ALSO WORKED WITH THE FEDERAL TRADE COMMISSION IN SOME OF THE HEARINGS ABOUT TESTING METHODS FOR CIGARETTES.

AND FINALLY, I HAVE WORKED FOR THE NATIONAL INSTITUTES OF HEALTH ON A GRANT STUDY SECTION. THE N.I.H., AS IT IS CALLED, IS THE AGENCY THAT PROVIDES RESEARCH GRANTS TO SCIENTISTS TO DO MEDICAL RESEARCH. AND THEY GRANT REVIEW PANELS. SCIENTISTS ARE ASKED TO SERVE FOR FOUR

1902

YEARS AND TO REVIEW GRANT APPLICATIONS FROM OTHER SCIENTISTS.

SO I SERVED ON THAT COMMITTEE FOR FOUR YEARS.

Q. OKAY, THANKS.

I AM NOT GOING TO HIT ON ALL OF YOUR QUALIFICATION ALL AT ONCE. I AM GOING TO TALK JUST A LITTLE BIT MORE ABOUT THEM AND TALK ABOUT SOME SUBJECT MATTER AND THEN LATER ON RETURN TO YOUR QUALIFICATIONS.

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WHO'S DAVID KESSLER?
A. HE WAS THE FOOD AND DRUG ADMINISTRATION COMMISSIONER AT THE TIME THAT NICOTINE WAS JUDGED TO BE A DRUG AND WHEN THE F.D.A. DECIDED THAT NICOTINE SHOULD BE REGULATED AS A DRUG.
Q. DID YOU --
MR. CARLTON: OBJECTION, RELEVANCE.
THE COURT: I AM GOING TO ALLOW YOU TO PROCEED. FOUNDATION AT THIS TIME, THOUGH, PLEASE.
MR. PIUZE: YES.
THE COURT: FOUNDATION FOR YOUR QUESTIONS.
Q BY MR. PIUZE: WHAT I AM INTERESTED IN IS, DID YOU BRIEF DR. KESSLER IN REGARD TO THESE ISSUES?
A. YES. I WAS ONE OF THE PEOPLE WHO DID THAT. HE NEEDED BACKGROUND TO UNDERSTAND WHAT

1903

NICOTINE DID AND HOW IT REGULATED SMOKING AND NICOTINE CONTENT OF CIGARETTES. AND I HAD DONE RESEARCH IN ALL THESE AREAS SO I DID BRIEF DR. KESSLER AND HIS STAFF.
THE COURT: GOING TO THE ISSUE OF QUALIFICATIONS. PROCEED.
MR. PIUZE: RIGHT. AND THAT'S ALL I AM TRYING TO GET AT.
THE COURT: DON'T ARGUE, JUST PROCEED.
MR. PIUZE: OKAY, THANK YOU.
Q BY MR. PIUZE: WHEN DR. KESSLER, THE HEAD OF THE F.D.A., NEEDED SOME INFORMATION REGARDING NICOTINE, TOBACCO, THE ADDICTIVE PROPERTIES OF NICOTINE, ONE OF THE PEOPLE HE CAME AND ASKED, PLEASE TELL ME ABOUT IT, WAS THAT YOU?
A. YES.
Q. YOU ARE A PRACTICING DOCTOR?
A. YES.
Q. UNDER WHAT CIRCUMSTANCES DO YOU SEE PATIENTS, PLEASE.
A. WELL, I AM A PHYSICIAN WHO IS FULLY EMPLOYED BY A MEDICAL SCHOOL. SO I SPEND ABOUT A THIRD OF MY TIME ON PATIENT CARE.
THAT INCLUDES ONE-HALF DAY A WEEK WHEN I SEE PATIENTS IN THE CARDIOLOGY CLINIC. SO IT'S GENERAL HEART DISEASE.
TWO MONTHS OF THE YEAR I AM ONE OF THE PHYSICIANS RESPONSIBLE FOR THE MEDICINE BOARDS,

1904

SO I WORK WITH A TEAM OF INTERNS AND RESIDENTS AND MEDICAL STUDENTS TO TAKE CARE OF PATIENTS ON THE UNIT.
ONE MONTH IS GENERAL MEDICINE, ONE MONTH IS CARDIOVASCULAR DISEASE.
AND THEN PART OF MY CLINICAL PHARMACOLOGY DIVISION IS THE POISON CENTER. AND I SPEND SIX WEEKS AS A CONSULTING PHYSICIAN FOR THE POISON CENTER. SO THAT TOTALS UP ABOUT A THIRD OF MY TIME ALL TOGETHER.
Q. WHETHER YOU TAKE CARE OF HEART PATIENTS, AS A CARDIOLOGIST, IS SMOKING SOMETIMES AN ISSUE?

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A. WHENEVER SOMEONE SMOKES IT IS AN ISSUE BECAUSE SMOKING IS A MAJOR CAUSE OF HEART DISEASE.

IF SOMEONE HAS CORONARY DISEASE, IT INCREASES THEIR RISK OF DYING SUDDENLY FOUR-FOLD. IT INCREASES THE RISK OF HAVING A HEART ATTACK TWO-FOLD. AND EVERY PATIENT THAT I SEE WHO SMOKES, I TRY TO GET THEM TO STOP.

Q. WHEN YOU SEE A PATIENT -- LET ME START THIS DIFFERENTLY.

BEFORE A PATIENT GETS TO SEE YOU, HAS THIS PATIENT NECESSARILY GONE THROUGH A COUPLE OTHER LAYERS OF DOCTORS ALREADY?

A. GENERALLY, THEY HAVE TO BE REFERRED TO THE CARDIOLOGY CLINIC, OR IF SOMEONE I HAVE SEEN

1905

IN A HOSPITAL ALREADY, I REFER THEM TO FOLLOW THEM AT THE CLINIC.

Q. SO WHEN A PATIENT, A CARDIOLOGY PATIENT GETS TO SEE YOU, TYPICALLY, DOES THAT MEAN THAT THAT PARTICULAR PERSON HAS SOMETHING FAIRLY SERIOUSLY WRONG WITH THEIR HEART?

A. YES.

Q. NOW, IN THESE PATIENTS WHO SEE YOU, WHO HAVE GOT SOMETHING FAIRLY SERIOUSLY WRONG WITH THEIR HEART AND YOU FIND OUT THEY ARE SMOKING AND YOU, THE PROFESSOR COMES IN AND SAYS, STOP SMOKING, BECAUSE IF YOU DON'T, YOU GOT A FOUR-FOLD INCREASE OF DEATH AND A TWO-FOLD INCREASE IN HEART ATTACK, THEY STOP; RIGHT?

A. NO. I WISH THEY DID.

MOST OF THE PATIENTS THAT I SEE HAVE ALREADY BEEN TOLD MANY TIMES TO STOP SMOKING.

MOST OF THEM SAY THEY WOULD LIKE TO STOP SMOKING AND THEY HAVE TRIED TO STOP SMOKING BUT THEY HAVE NOT BEEN ABLE TO FOR A VARIETY OF REASONS.

AND I TRY TO SPEND TIME TO TRY TO FIGURE OUT WHY, WHAT HAS HAPPENED BEFORE WHEN THEY TRIED TO QUIT SMOKING.

I ASK THEM IF THEY WOULD LIKE TO TRY AGAIN. I OFFER THEM HELP WITH EITHER COUNSELING OR MEDICATION OR BOTH. AND I TELL THEM THAT IT'S COMMON HISTORY THAT SMOKERS TRY AND FAIL

1906

TO QUIT SMOKING MANY TIMES, BUT EVENTUALLY MOST PEOPLE DO SUCCEED.

AND I SAY, JUST TRY AGAIN AND I WILL HELP YOU AND EVENTUALLY YOU WILL SUCCEED.

THAT'S MY APPROACH AND HOPEFULLY THEY WILL SUCCEED. SOME DO AND SOME DON'T.

Q. SO YOUR APPROACH SOMETIMES SUCCEEDS AND SOMETIMES DOESN'T SUCCEED?

A. YES.

Q. IS NICOTINE ADDICTIVE?

A. ABSOLUTELY.

Q. IS THIS SOMETHING YOU JUST FOUND OUT IN THE YEAR 2001?

A. NO. THE FACT THAT NICOTINE IS ADDICTIVE HAS BEEN KNOWN FOR MANY YEARS.

I THINK WHAT WE HAVE LEARNED IN THE

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LAST 20 YEARS IS HOW IT IS ADDICTIVE AND WHY IT IS ADDICTIVE.

THE FACT THAT IT IS ADDICTIVE AS BEEN KNOWN FOR A LONG TIME.

Q. WHY IS IT ADDICTIVE?

A. WELL, LET ME JUST START BY TALKING ABOUT WHAT IS NICOTINE.

Q. OKAY.

A. IT'S A CHEMICAL THAT'S FOUND MOSTLY IN TOBACCO. SIGNIFICANT AMOUNTS, OBVIOUSLY IN TOBACCO.

IT'S A CHEMICAL THAT HAS A

1907

STRUCTURE THAT'S LIKE A BODY HORMONE, ACETYLCHOLINE.

Q. STOP.

A. IT'S CALLED ACETYLCHOLINE AND IT'S IMPORTANT HERE MORE THAN IN THE BODY BECAUSE THIS IS RESPONSIBLE FOR NERVE COMMUNICATION.

ONE NERVE TALKS TO ANOTHER. IT SIGNALS BY RELEASE OF THIS HORMONE. I COULD CALL IT A.C.H., MAYBE THAT WOULD BE EASIER.

Q. A.C.H., WHERE IS THAT IN THE BODY?

A. IT'S THROUGHOUT THE NERVOUS SYSTEM, IN VERY HIGH CONCENTRATION IN THE BRAIN.

A.C.H. WORKS BY BINDING TO WHAT'S CALLED A RECEPTOR. A RECEPTOR IS A PROTEIN THAT BEHAVES LIKE A LOCK AND KEY MECHANISM SO THE KEY WOULD BE THE HORMONE OR A.C.H. THAT ATTACHES TO THE RECEPTOR AND THEN ACTIVATES THE RECEPTOR.

AND THEN THE RECEPTOR DOES SOMETHING, CAUSES AN EFFECT IN THE BRAIN THAT ACTUALLY CAUSES RELEASE OF OTHER HORMONES THAT EFFECT MOOD AND BEHAVIOR.

Q. LET ME STOP YOU FOR A SECOND.

A.C.H. ALLOWS THE RECEPTORS TO WORK?

A. RIGHT. THAT'S THE KEY THAT OPENS UP THE LOCK. THE RECEPTOR IS THE LOCK.

Q. DEFINE 'RECEPTOR.'

A. OKAY. WELL, A RECEPTOR IS A

1908

PROTEIN THAT HAS GOT A PART OF ITS STRUCTURE IS TO ALLOW HORMONES OR CHEMICALS TO ATTACH TO IT.

THERE ARE -- IT'S SHAPED IN SUCH A WAY, SORT OF LIKE A LOCK SO A KEY FITS IN. AND IT IS JUST THE RIGHT SHAPE. AND IN THESE RECEPTORS, THESE ARE A.C.H. RECEPTORS THAT ARE JUST THE RIGHT SHAPE TO FIT INTO THIS KEYHOLE.

Q. SO WHAT HAPPENS WHEN THE KEY FITS INTO THE KEYHOLE?

A. WELL, IT ACTIVATES THE RECEPTOR, ACTUALLY, CAUSES A CHANGE IN THE SHAPE OF THE RECEPTOR, ACTIVATES A NERVE TO FIRE AND THEN THAT NERVE, IN TURN, RELEASES OTHER HORMONES THAT HAVE EFFECTS ON BEHAVIOR AND THINKING AND MOOD.

SO, ANYWAY, GETTING BACK TO WHAT I WAS SAYING BEFORE, NICOTINE, IS SHAPED LIKE A.C.H. IT'S NOT NORMALLY IN THE BODY. BUT IF A PERSON TAKES IN NICOTINE, IT ATTACHES TO THE SAME RECEPTORS THAT ARE MEANT FOR A.C.H. SO IT'S A WAY

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FOR YOU TO SORT OF TAKE, IN A DRUG FORM, A DRUG THAT STIMULATES RECEPTORS THAT ARE MEANT FOR A BODY HORMONE.

SO YOU TAKE NICOTINE AND YOU ACTIVATE THE RECEPTORS JUST AS IF YOUR BRAIN WAS RELEASING A.C.H.

Q. SO NICOTINE IS LIKE A DUPLICATE KEY FOR A.C.H.?

A. RIGHT.

1909

Q. AND NICOTINE, THEREFORE, ARTIFICIALLY DOES WHAT YOUR BRAIN CAN DO UNDER NORMAL CIRCUMSTANCES?

A. RIGHT.

BUT IT DOES IT IN LARGER AMOUNTS BECAUSE YOU CAN ACTIVATE THESE RECEPTORS MORE WITH NICOTINE THAN THE BRAIN WOULD NORMALLY DO IT WITH A.C.H. AND YOU CAN DO IT AT DIFFERENT TIMES. YOU CAN DO IT AT TIMES WHEN A.C.H. LEVELS MIGHT BE LOW BUT YOU CAN TAKE A CIGARETTE AND DELIVER THE RECEPTORS.

SO YOU CAN SORT OF TAKE OVER A NORMAL BODY FUNCTION WITH THE DRUG.

Q. SO LET ME STOP YOU THERE, AGAIN.

BECAUSE I KNOW YOU HAVE TALKED ABOUT THIS LOTS OF TIMES, BUT THIS IS THE FIRST TIME THAT WE ARE HEARING IT.

INSIDE OF A PERSON'S BODY, THE BODY IS REGULATED, YOU KNOW, TO BE A NORMAL KIND OF REGULAR BODY, UNDER CONTROL, REGULATED BODY. THERE'S A CERTAIN AMOUNT OF A.C.H. WHICH IS THERE, AND EVERY ONCE IN AWHILE, WHENEVER THE BODY TELLS IT TO, IT DOES ITS OPEN THE LOCK THING, AND IT HAS THE RESULTS THAT ARE NECESSARY TO KEEP THE BODY IN TUNE.

IS THAT RIGHT SO FAR?

A. YES.

Q. WHEN SOMEONE TAKES NICOTINE INTO

1910

THEIR BODY, THE AMOUNT OF NICOTINE THE PERSON CAN TAKE INTO THE BODY CAN BE WAY MORE, CAN MIMIC WAY MORE A.C.H. THAN THE BODY USUALLY NEEDS AND SO THE THING EITHER GETS UNLOCKED AND THE DOOR OPENED WIDER OR THE DOOR OPENED MORE FREQUENTLY OR BOTH.

IS THAT A ROUGH ANALOGY SO FAR?

A. YES.

Q. ONE MORE THING BEFORE WE GO ON.

IF NICOTINE COMES FROM TOBACCO SMOKE, THE PERSON SMOKING, WHETHER HE OR SHE KNOWS IT OR NOT, THIS PERSON CAN DETERMINE HOW MUCH OF THIS DUPLICATE A.C.H. HE OR SHE IS GOING TO PUT IN THE BODY BY HOW MUCH HE OR SHE IS SMOKING, HOW MUCH HE OR SHE INHALES, STUFF LIKE THAT?

MR. CARLTON: OBJECTION, LEADING.

THE COURT: IT WAS LEADING.

MR. PIUZE: WITH AN EXPERT, I DON'T KNOW HOW MUCH LEEWAY YOU WANT.

THE COURT: I WILL ALLOW IT. JUST AS LONG AS IT'S NOT TOO --

THE WITNESS: LET ME JUST --

THE COURT: IS WHAT HE SAID ACCURATE?

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THE WITNESS: YES.
Q BY MR. PIUZE: NOW THAT I HAVE SAID MY NON-DOCTOR PIECE, GO AHEAD, PLEASE, AS A DOCTOR, TELL US WHY IT WASN'T COMPLETELY ACCURATE?
A. WELL, I WAS GOING TO EXPLAIN THE WHOLE ISSUE OF NICOTINE DELIVERY FROM A CIGARETTE,

1911

JUST IN TERMS OF WHAT IS NICOTINE, THE REASON WHY NICOTINE IS IN A PLANT IS THOUGHT TO BE BECAUSE IT IS A NATURAL INSECTICIDE. IT KILLS BUGS. AND IT DOES IT BECAUSE IT WORKS ON THE BUG'S BRAIN RECEPTORS THE SAME WAY IT WORKS ON PEOPLE. BUT THE INSPECT'S RECEPTORS OR BRAINS ARE MORE SENSITIVE.

BUT NICOTINE IS WELL-KNOWN AS AN INSECTICIDE. IT IS SOLD IN STORES AS BLACK FLAG 40 -- YOU CAN BUY IT -- OR BLACK LEAF 40, AND USE IT TO SPRAY ON ROSES. THAT'S AT HIGHER CONCENTRATIONS.

PEOPLE CAN USE IT WITHOUT GETTING SICK, IN PART, BECAUSE OF THE CIGARETTE. WHEN YOU SMOKE A CIGARETTE, WHEN YOU HEAT UP A CIGARETTE, YOU BOIL OFF NICOTINE.

NICOTINE THEN BOILS OFF AND THEN COMBINES WITH OTHER THINGS THAT ARE IN THE CIGARETTE TO FORM DROPLETS WHICH CONTAIN TAR, WATER AND NICOTINE.

AND THOSE DROPLETS ARE WHAT'S CALLED AEROSOL, A BUNCH OF DROPLETS THAT ARE IN GAS, WHICH IS CARBON MONOXIDE AND OTHER GASES.

YOU BREATHE NICOTINE -- YOU BREATHE THE GAS IN. IT GOES TO YOUR LUNGS, VERY RAPIDLY GETS ABSORBED. AND SO WITHIN 10 OR 15 SECONDS OF TAKING A PUFF, NICOTINE GETS TO YOUR BRAIN BECAUSE IT GOES RIGHT, LUNGS, HEART, BRAIN.

ONE OF THE THINGS ABOUT SMOKING IS

1912

THAT BECAUSE IT GOES RIGHT TO YOUR BRAIN AND IT'S IN A SHORT PERIOD OF TIME, YOU CAN GET VERY HIGH CONCENTRATIONS, CONCENTRATIONS THAT IF YOU TRY TO EAT NICOTINE, WOULD POISON YOU. BUT BY SMOKING THEM, YOU CAN GET VERY HIGH CONCENTRATIONS IN A SHORT TIME TO THE BRAIN.

OTHER THINGS THAT ARE IMPORTANT, ONE IS AS YOU MENTIONED BEFORE, ON A PUFF TO PUFF BASIS, BECAUSE YOU GET AN EFFECT IN 10 OR 15 SECONDS, YOU CAN WHAT'S CALLED TITRATE, YOU CAN ADJUST THE DOSE TO GET JUST THE DOSE THAT YOU WANT.

SECOND THING IS THAT BECAUSE YOU DO SOMETHING, YOU TAKE A PUFF AND YOU GET THE EFFECT IN 10 OR 15 SECONDS. THERE IS A LOT OF WHAT'S CALLED SCIENTIFICALLY IMMEDIATE REINFORCEMENT. THAT MEANS YOU DO SOMETHING AND YOU GET CONSEQUENCES RIGHT AWAY.

AND, OF COURSE, IT'S A GOOD CONSEQUENCE FOR MOST SMOKERS, THEY LIKE WHAT IT DOES.

AND THAT COMBINATION OF DOING SOMETHING AND GETTING IMMEDIATE REINFORCEMENT IS WELL-KNOWN TO BE A SITUATION THAT MOST ENCOURAGES ADDICTION.

IT IS MOST ADDICTING DRUGS, YOU

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TAKE SOMETHING, YOU GET AN EFFECT RIGHT AWAY, THE BODY CONNECTS IT RIGHT AWAY AND THAT'S THE MOST COMMON SITUATION FOR ADDICTION.

1913

SO WE KNOW THAT CIGARETTES ARE THE MOST ADDICTING WAY TO TAKE NICOTINE, JUST LIKE SMOKING CRACK COCAINE IS THE MOST ADDICTING WAY THE USE COCAINE. BECAUSE IF YOU SMOKE COCAINE, COCAINE GETS THERE IN HIGHER CONCENTRATIONS, FASTER, AND YOU CAN CONTROL THE DOSE A LITTLE BIT.

Q. AS OPPOSED TO, LET'S STOP THERE FOR A SECOND, USING CRACK AS OPPOSED TO WHAT, SNORTING COCAINE?

A. SNORTING, YEAH, SNORTING COCAINE OR YOU COULD EVEN SWALLOW COCAINE AND YOU CAN GET AN EFFECT. BUT IT IS MUCH SLOWER ONSET. YOU CAN'T CONTROL THE DOSE, SO IT'S NOT WIDELY USED THAT WAY.

BUT SMOKING COCAINE IS MUCH MORE ADDICTIVE THAN SNORTING COCAINE.

Q. AND IS IT MUCH MORE ADDICTIVE BECAUSE, FROM THE TIME THE PERSON DOES SOMETHING TO THE TIME OF THE HIT, THE HIGH, THE REACTION, IT'S QUICKER?

A. IT'S QUICKER AND YOU CAN JUST TITRATE HOW MUCH EFFECT YOU WANT.

Q. NOW, YOU HAVE SAID THAT TWICE BUT WHEN YOU SAY YOU CAN TITRATE THE EFFECTS YOU WANT, THAT ISN'T EXACTLY IN THE KIND OF TERMS WE USE EVERY DAY.

PLEASE SAY THAT DIFFERENTLY.

A. WELL, IF YOU HAVE, SAY, THERE'S A CERTAIN AMOUNT OF NICOTINE THAT MAKES YOU FEEL

1914

GREAT OR HELPS YOU CONCENTRATE DOING YOUR JOB OR HELPS YOU DEAL WITH STRESS, WHATEVER YOU ARE TRYING TO SMOKE FOR, I WILL TALK ABOUT THAT IN A FEW MINUTES, THAT MAY REQUIRE A CERTAIN AMOUNT OF NICOTINE IN YOUR BRAIN TO DO THAT.

BUT AFTER EACH PUFF YOUR BRAIN CAN REGISTER HOW MUCH NICOTINE YOU GOT THERE.

AND THE NEXT PUFF YOU CAN TAKE A BIGGER PUFF OR A SMALLER PUFF, THIS IS AUTOMATIC, YOUR BODY JUST DOES IT UNCONSCIOUSLY, TO GET THE AMOUNT OF NICOTINE. AND THEN YOU CAN SMOKE A CIGARETTE DEEPLY, YOU CAN SMOKE IT NOT SO DEEPLY. YOU CAN PUT IT OUT SOONER OR LATER.

BY DOING ALL THOSE THINGS, YOU CAN GET WHATEVER AMOUNT OF NICOTINE DOSE YOUR BRAIN WANTS.

Q. SOMETIMES IN TODAY'S CURRENT WORLD, I SEE WORKERS GOING OUTSIDE OF A BUILDING, IT DOESN'T HAVE TO BE A WORKER, IT COULD BE A JUROR OR IT COULD BE ANYONE, SOMEONE GOES OUTSIDE OF A BUILDING TO HAVE A PUFF OF A CIGARETTE AND I SOMETIMES NOTICE THAT WHEN I GET OUTSIDE, THE FIRST COUPLE OF HITS OF ONE OF THESE IS BIG ONES LIKE THAT (INDICATING).

DOES THAT PLAY INTO WHAT YOU WERE SAYING?

A. YEAH, THAT'S EXACTLY RIGHT.

WE DID RESEARCH THAT I PUBLISHED

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1915

SEVERAL YEARS AGO, SORT OF LIKE THAT.
I ASKED PEOPLE TO SMOKE FEWER CIGARETTES. SO I -- PEOPLE WHO NORMALLY SMOKED 30 CIGARETTES A DAY, I GIVE THEM 15 TO SMOKE IN A DAY OR 10 OR 5.
AND WHAT I FOUND IS THAT IF YOU RESTRICTED SOMEONE FROM 30 DOWN TO 5, THEY TAKE IN THREE TIMES AS MUCH NICOTINE IN SMOKE PER CIGARETTE. SO REALLY TRYING TO GET THE MOST DOSE THEY CAN TO MAINTAIN WHAT THE BODY SEES AS A DESIRE LEVEL.
SO IF YOU CAN'T SMOKE AS OFTEN AS YOU LIKE, YOU DO TAKE IN MORE WITH EACH CIGARETTE.
Q. THANKS.
NOW, WHILE WE ARE STOPPED HERE MOMENTARILY. YOU HAVE TOLD US ABOUT AN EXTENSIVE BACKGROUND IN TOBACCO, NICOTINE, SMOKING, ADDICTION. BUT IN SOME OF THE LAST ANSWERS NOW, YOU HAVE GONE AWAY FROM NICOTINE AND INTO COCAINE, FOR INSTANCE.
A. YES.
Q. HOW DO YOU KNOW ABOUT STUFF LIKE COCAINE PLEASE.
A. WELL, I HAVE DONE SOME RESEARCH ON OTHER STIMULANTS, COCAINE, CAFFEINE, ON OTHER DRUGS. AND I HAVE WRITTEN AND TAUGHT A LOT ABOUT DRUG ADDICTION IN GENERAL. I HAVE WRITTEN MANY CHAPTERS THAT TALK ABOUT ADDICTION TO DRUGS

1916

BROADLY.
AND ONE OF THE THINGS THAT BECAME CLEAR IN THE SURGEON GENERAL'S REPORT IS THAT THERE ARE A LOT OF SORT OF BRAIN MECHANISMS AND BEHAVIORAL MECHANISMS THAT ARE IN COMMON WITH DIFFERENT DRUGS OF ABUSE.
SO NICOTINE AND ALCOHOL AND COCAINE AND HEROIN ARE NOT THAT DIFFERENT, EXCEPT FOR INTOXICATION. INTOXICATION IS DIFFERENT. PEOPLE OBVIOUSLY DON'T GET LOADED FROM NICOTINE THE WAY THEY DO FROM COCAINE OR ALCOHOL OR HEROIN.
BUT IF YOU PUT THAT ASIDE, SOME OF THE OTHER BEHAVIORAL EFFECTS AND BEHAVIORAL ASPECTS OF IT ARE VERY SIMILAR.
Q. YOU JUST USED THE TERM, A TERM, "DRUGS OF ABUSE."
WHAT DO YOU MEAN BY THAT, PLEASE.
A. THESE ARE DRUGS THAT PEOPLE USE TO, WHAT'S THE BEST WORD, TO CONTROL BEHAVIOR, OR TO INFLUENCE MOOD OR INFLUENCE BEHAVIOR. OFTEN THE DRUGS ARE USED IN EXCESS. OFTEN THE DRUGS ARE USED TO PERSONAL HARM OR SOCIAL HARM.
SO THESE ARE DRUGS THAT ARE USED IN A WAY THAT IS REALLY DETRIMENTAL. I'D SAY THAT'S PROBABLY THE BEST DEFINITION.
Q. OKAY. AND DRUGS OF ABUSE, INCLUDING WHAT?
A. WELL, THE MAIN DRUGS OF ABUSE THAT

1917

WE TALK ABOUT ARE, BESIDES NICOTINE, WOULD BE

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ALCOHOL, HEROIN, OTHER NARCOTICS, OTHER OPIATES, MARIJUANA, COCAINE, AMPHETAMINES AND OTHER STIMULANTS, BARBITURATES, OTHER KINDS OF SEDATIVE DRUGS, AND THINGS LIKE GLUE SNIFFING. STEROIDS CAN ACTUALLY BE ABUSED.

I GUESS THAT'S, FOR THE MOST PART -- SOME MARIJUANA. DID I SAY MARIJUANA IS ALSO ABUSED?

Q. NICOTINE IS IN THERE?

A. RIGHT, NICOTINE IS IN THERE.

Q. WELL, LET'S GO BACK -- THANK YOU.

LET'S GO BACK TO WHAT WE WERE TALKING ABOUT WHICH IS, I THINK YOU WERE TALKING ABOUT NICOTINE?

A. RIGHT.

Q. AND WE HAD GONE THROUGH THE A.C.H. AND HOW --

A. RIGHT. NOW WHAT A.C.H. EFFECTS DO, WHAT ACTIVATING THE RECEPTOR DOES IS IT CAUSES THE BRAIN TO RELEASE A NUMBER OF HORMONES. ONE HORMONE THAT'S TALKED ABOUT A LOT IS DOPAMINE.

DOPAMINE IS TALKED ABOUT A LOT BECAUSE THAT IS A HORMONE IN THE BRAIN THAT'S INVOLVED WITH PLEASURE, SOMETHING FEELING GOOD OR YOU FEELING GOOD OR SOME SORT OF PLEASURABLE RESPONSE.

AND EVERY DRUG OF ABUSE RELEASES

1918

DOPAMINE IN KEY PARTS OF THE BRAIN. THAT'S A COMMONALITY.

NICOTINE ALSO CAUSES OTHER HORMONES TO BE RELEASED, TO DO DIFFERENT THINGS.

ONE HORMONE, AS I SAID, CAUSES PLEASURE. ONE HORMONE CAN CAUSE AROUSAL OF STIMULATION. SOME SMOKERS SAY THE FIRST CIGARETTE IN THE MORNING HELPS ME WAKE UP, LIKE COFFEE WOULD.

SMOKERS WILL SAY THAT HELPS ME CONCENTRATE AND FOCUS AND STAY ALERT.

THERE ARE OTHER HORMONES THAT ARE INVOLVED IN PERFORMANCE, THINKING AND PERFORMANCE EFFECTS.

SO SOME PEOPLE SAY I CAN WORK BETTER, YOU CAN CONCENTRATE BETTER WITH NICOTINE.

THERE ARE OTHER HORMONES THAT ARE INVOLVED IN STRESS MECHANISM, SO MANY SMOKERS SAY, I FEEL STRESSED, A CIGARETTE REALLY HELPS ME DEAL WITH STRESS.

THERE ARE SOME EFFECTS THAT ARE A LITTLE BIT LIKE ANTI-DEPRESSANT DRUGS. SO MANY SMOKERS SAY IF I FEEL BAD, IF I FEEL DEPRESSED, I HAVE A CIGARETTE, IT MAKES ME FEEL BETTER.

AN IMPORTANT CONCEPT, AND ALSO EATING. THE EFFECTS OF NICOTINE TO REDUCE BODY WEIGHT, TO LOSE APPETITE.

AND SOME PEOPLE SMOKE FOR BODY WEIGHT CONTROL.

1919

THE THING THAT SMOKERS FIND IS THAT THEY USE NICOTINE TO HELP COPE WITH A LOT OF DAILY STRESSES.

SO THEY CAN GET STIMULATION, IF

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THEY NEED IT, THEY CAN GET RELAXATION IF THEY ARE STRESSED. THEY CAN HELP LIFT THEIR MOOD. THEY CAN HELP CONCENTRATE. THEY CAN HELP FOCUS. AND MANY SMOKERS COME TO DEPEND ON NICOTINE TO GET THROUGH DAILY LIFE STRESSES. THEY USE NICOTINE EVERY DAY IN A REGULAR WAY AND WHEN THEY DON'T HAVE IT, THEY FEEL QUITE LOST AND THEIR BEHAVIOR IS DISRUPTED IN A SENSE.

SO PART ONE -- ONE-HALF OF WHAT PEOPLE GET FROM SMOKING IS THESE NICOTINE EFFECTS THAT THEY USE TO CONTROL MOOD AND BEHAVIOR.

THE OTHER THING WHICH IS VERY IMPORTANT IS THAT THERE'S WHAT'S CALLED TOLERANCE TO NICOTINE AND OTHER DRUGS OF ABUSE AND ACTUALLY ANY DRUG THAT EFFECTS THE BRAIN.

TOLERANCE MEANS THAT THE BRAIN IS TRYING TO NORMALIZE ITS FUNCTION. SO IF IT GETS TOO MUCH STIMULATION IN THESE RECEPTORS, THE BRAIN TRIES TO NORMALIZE THINGS.

AND WHAT HAPPENS IS THE BRAIN ACTUALLY CHANGES THE NUMBER OF RECEPTORS IN THE BRAIN THAT ARE MEANT TO BE A.C.H. RECEPTORS.

THEY ARE INCREASED IN MANY PARTS OF THE BRAIN. THEY ARE DOUBLED.

1920

NOW, THEY DON'T WORK THE SAME WAY. BUT THE STRUCTURE OF THE BRAIN CHANGES. SO YOU CAN DO SCANNING OR YOU CAN DO TESTS ON BRAINS FROM SMOKERS WHO HAVE DIED AND NON-SMOKERS WHO HAVE DIED AND YOU CAN MEASURE NICOTINE RECEPTORS AND IT IS QUITE A DIFFERENT PATTERN AND NUMBER.

Q. SO SMOKERS GET MORE NICOTINE RECEPTORS?

A. GET MORE NICOTINE RECEPTORS, THEY DON'T FUNCTION THE SAME WAY. BUT THE STRUCTURE OF THEIR BRAIN IS DIFFERENT THAN A SMOKER, DIFFERENT THAN A NON-SMOKER.

Q. LET ME STOP THERE FOR A SECOND, PLEASE.

THE FUNCTION OF A SMOKER'S BRAIN, AS FAR AS NICOTINE RECEPTORS, IS DIFFERENT THAN A NON-SMOKER'S, IS THIS --

A. THE FUNCTION AND THE STRUCTURE, THE ACTUAL STRUCTURE HAS CHANGED AS WELL.

Q. OKAY, THE STRUCTURE?

A. BOTH.

Q. GETS CHANGED BECAUSE THE SMOKER HAS HAD THIS NICOTINE OR IT WAS A DIFFERENT BRAIN BEFORE THE SMOKER EVER HAD THE NICOTINE?

A. IT IS FROM NICOTINE. BECAUSE IN ANIMALS, ONE CAN GIVE NICOTINE TO ANIMALS AND INDUCE THE SAME CHANGES THAT ARE SEEN IN SMOKERS' BRAINS. SO THIS IS SOMETHING THAT'S AN EFFECT OF

1921

NICOTINE WITH LONG-TERM EXPOSURE.

Q. BEFORE YOU GO -- SORRY, BUT SO I DON'T FORGET TO COME BACK, WHAT ABOUT, LET'S FORGET -- LET'S NOT FORGET, BUT LET'S NOT DISCUSS NON-SMOKERS. LET'S JUST STICK WITH THE SMOKERS WHO HAVE DIFFERENT NICOTINE RECEPTORS.

WHAT ABOUT WITHIN THE GROUP OF

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SMOKERS, DOES THAT VARY AS THE AMOUNT OF SMOKING VARIES?

A. WELL, CERTAINLY IN ANIMALS IT DOES. WE DON'T HAVE ENOUGH DATA IN HUMANS. WE DO KNOW THAT HUMANS' BRAINS ARE QUITE DIFFERENT IN TERMS OF THE NUMBERS OF RECEPTORS IN GENERAL.

SOME PEOPLE HAVE POOR RECEPTORS.

AND THERE ARE ALSO DIFFERENT TYPES. IT IS TOO COMPLICATED TO EXPLAIN. BUT THERE ARE LOTS OF DIFFERENT TYPES OF NICOTINE RECEPTORS.

AND THE PATTERN VARIES FROM PERSON TO PERSON.

AND WE THINK THIS IS IMPORTANT BECAUSE OF, OF VERY STRONG EVIDENCE THAT THERE ARE GENETIC DIFFERENCES IN HOW LIKELY A PERSON IS TO BECOME A SMOKER, TO BECOME A HIGHLY ADDICTED SMOKER, TO HAVE PROBLEMS QUITTING.

THERE ARE A LOT OF GENETICS INVOLVED WITH THAT.

THAT'S WHY SOME PEOPLE STOP SMOKING, AND ALMOST NO MATTER WHAT THEY DO, THEY

1922

CAN'T STOP.

OTHER PEOPLE ARE SMOKERS AND THEY CAN JUST STOP AND NEVER HAVE A PROBLEM.

UNFORTUNATELY, THERE ARE NOT MANY OF THE LATTER. MOST PEOPLE DO HAVE TROUBLE QUITTING. BUT WE KNOW THERE ARE BIG DIFFERENCES IN BRAINS AND SUSCEPTIBILITY TO NICOTINE EFFECTS.

Q. SO WHEN, JUST AS AN EXAMPLE, IF I LINED UP 4 PEOPLE OR 400 PEOPLE OR 4 MILLION PEOPLE, IT DOESN'T MATTER UP THERE, AND SAID, WELL, ONE STOPPED COLD TURKEY, JUST PUT THEM DOWN NEVER HAD ANOTHER CIGARETTE, EVER, SO THAT MEANS THE OTHER THREE SHOULD BE ABLE TO STOP. IS THAT RIGHT OR WRONG?

A. IT'S ABSOLUTELY WRONG.

AND THIS IS ACTUALLY -- IT'S TRUE FOR NICOTINE. BUT IF YOU LOOK AT OTHER DRUGS OF ABUSE, IT'S THE SAME THING. THERE ARE SOME HEROIN ADDICTS WHO JUST DECIDE THEY NEED TO STOP AND THEY JUST STOP, THAT'S IT.

SAME THING FOR ALCOHOLICS, NOT MANY.

WITH SMOKERS, IT'S THE SAME THING. MANY SMOKERS SAY THEY WANT TO STOP. A FEW STOP AND HAVE NO PROBLEMS. MOST HAVE DIFFICULTY. THEY CAN EVENTUALLY QUIT, BUT IT TAKES FOUR OR FIVE ATTEMPTS, ON AVERAGE. AND SOME CAN NEVER QUIT. SOME SEEM TO TRY AND TRY AND TRY AND NEVER SEEM TO

1923

MAKE IT.

Q. OF THE FOUR PEOPLE I HAD UP THERE, LET'S TALK ABOUT THE REMAINING THREE, ONE JUST QUIT COLD TURKEY AND THAT PERSON IS GONE.

NOW, OF THE OTHER THREE, ONE OF THEM QUITS, I DON'T KNOW, RELATIVELY EASILY, SMOKES FOR, DOESN'T SMOKE THAT MUCH TO START WITH, SMOKES FIVE CIGARETTES A DAY OR MAYBE A PACK A WEEK OR TWO PACKS A WEEK, SOMETHING LIKE THAT, AND THE PERSON, AFTER ONE ATTEMPT OR TWO ATTEMPTS STOPS AND STAYS

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STOPPED.
SO USING THAT PERSON AS AN EXAMPLE NOW, I AM LOOKING AT THE OTHER TWO WHO CAN'T DO THAT, BECAUSE -- WELL, CAN'T THEY DO THAT OR IS IT JUST THAT THEY HAVEN'T TRIED HARD ENOUGH?
A. NO. THEY ARE PROBABLY GOING TO BE DIFFERENT.
THERE IS A SPECTRUM OF ADDICTION -- THIS IS SOMETHING THAT I HAVE STUDIED AS WELL, THAT THERE ARE PEOPLE, MAYBE 15 PERCENT OF THE POPULATION HAS SMOKED FIVE OR FEWER CIGARETTES AND SOMETIMES DON'T EVEN SMOKE EVERY DAY. AND THOSE ARE PEOPLE WHO ARE NOT HIGHLY ADDICTIVE OR NOT ADDICTED AT ALL. SO THESE PEOPLE MAY TRY TO QUIT, CAN QUIT WITHOUT MUCH PROBLEM, USUALLY.
THERE IS SOME EXCEPTIONS, BUT USUALLY WHEN YOU GET TO PEOPLE WHO ARE SMOKING TEN OR MORE CIGARETTES PER DAY, MOST ARE ADDICTED AND

1924

MOST HAVE DIFFICULTY QUITTING.
Q. LET'S -- YOU SAY, OF PEOPLE WHO SMOKED TEN OR MORE A DAY, MOST ARE ADDICTED AND HAVE TROUBLE QUITTING.
WHAT IF WE BUMP UP THE NUMBER TO 20 A DAY, WHICH IS A PACK, OR 40 A DAY, WHICH IS TWO PACKS, WHAT DO YOU HAVE TO SAY ABOUT THE PERCENTAGE OF THOSE PEOPLE BEING ADDICTED?
A. WELL, THERE'S ROUGH CORRELATIONS. IT IS NOT PERFECT. THERE IS A ROUGH CORRELATION BETWEEN HOW MUCH YOU SMOKE AND HOW ADDICTED YOU ARE.
SO WHEN YOU GET TO PEOPLE SMOKING 20 OR MORE CIGARETTES PER DAY, THOSE ARE GENERALLY HIGHLY ADDICTED SMOKERS. AND THEY GENERALLY HAVE TROUBLE QUITTING.
Q. SO I INTERRUPTED YOU AND I DIDN'T -- I DON'T KNOW IF YOU WERE DONE OR ALMOST DONE WITH WHERE YOU WERE.
A. NO.
I HAVE TALKED ABOUT ONE ASPECT.
SMOKING FOR SOME OF THE WHAT ARE CALLED PRIMARY EFFECTS OF NICOTINE, SO THESE ARE THE THINGS THAT NICOTINE MIGHT DO ON HORMONES.
WHEN THE BRAIN BECOMES TOLERANT, THEN IT CHANGES AND GETS TO THE STATE THAT IT NEEDS NICOTINE TO FUNCTION NORMALLY, NOT SUPER NORMALLY BUT JUST NORMALLY.

1925

AND THEN WHEN A PERSON DOESN'T SMOKE CIGARETTES, THEN THERE IS A SUBNORMAL RELEASE OF HORMONES, SO IT IS NOT THE NORMAL A.C.H. FUNCTION ANY MORE. NOW THERE IS A DEFICIENT RELEASE AND WHAT ONE SEES ARE WITHDRAWAL SYMPTOMS THAT ARE THE OPPOSITE OF THE PRIMARY SYMPTOMS.
SO INSTEAD OF FEELING GOOD, SMOKERS DON'T FEEL GOOD, THEY DON'T FEEL RIGHT, THEY FEEL DEPRESSED, THEY FEEL ANXIOUS, THEY ARE OFTEN IRRITABLE, OFTEN HAVE TROUBLE GETTING ALONG WITH FAMILY AND CO-WORKERS, SMOKERS, WHEN THEY CAN'T SMOKE, OFTEN HAVE TROUBLE CONCENTRATING ON THEIR JOBS AND DOING THEIR WORK.

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THEY OFTEN HAVE TROUBLE DEALING WITH STRESS. THEY FEEL MORE STRESSED, FEEL THEY CAN'T COPE WITH STRESS AS WELL.
HUNGER, WEIGHT GAIN IS COMMON.
SO THOSE ARE WITHDRAWAL SYMPTOMS OR SYMPTOMS.
SO THAT'S THE OPPOSITE.
AND SMOKERS SMOKE FOR BOTH THOSE THINGS. THEY SMOKE BECAUSE CIGARETTES DO SOME THINGS THAT THEY LIKE AND THEY ALSO SMOKE BECAUSE WHEN THEY ARE NOT SMOKING THEY FEEL BAD, AND IF THEY FEEL BAD, IMMEDIATELY THEY HAVE A CIGARETTE, THEY FEEL BETTER, BECAUSE THEY ARE RELIEVING THE WITHDRAWAL SYMPTOMS.
SO IT'S A COMBINATION OF BOTH THOSE

1926

THINGS THAT PLAY A ROLE IN SMOKING.
NOW, ONE THING WE HAVE LEARNED ABOUT THE WITHDRAWAL SYMPTOMS IN RECENT YEARS IS SOME OF THEM CAN PERSIST FOR MONTHS OR MAYBE EVEN YEARS. ESPECIALLY THE ALTERED MOOD. MANY SMOKERS SAY WHEN THEY QUIT, AND THIS IS TRUE FOR EVERY DRUG ABUSER ALSO, I JUST DON'T FEEL RIGHT, THINGS ARE NOT FUN TO ME ANY MORE, DON'T HAVE NORMAL ENERGY, I HAVE MORE STRESS THAN NORMAL, I JUST DON'T FEEL NORMAL, I AM A BIT DEPRESSED, THEY HAVE A CIGARETTE. ALL OF THE SUDDEN, IT NORMALIZES.
THAT SYMPTOM CAN LAST FOR MONTHS. AND ONE THING WHICH WE FOUND WITH EXPOSURES, WHICH IS VERY DISCOURAGING FOR THE SMOKERS AND FOR US TRYING TO QUIT SMOKING -- TO HELP SMOKERS, IS THAT THEY CAN QUIT SOMETIMES FOR WEEKS OR EVEN MONTHS AND THEN RELAPSE.
IF YOU LOOK AT CURVES OF SMOKERS WHO TRIED TO QUIT, SAY THEY HAVE SUCCEEDED FOR A WEEK. WELL, BY THREE MONTHS, 60 PERCENT OF THEM WILL HAVE STARTED SMOKING AGAIN, EVEN IF THEY MANAGED TO NOT SMOKE FOR SEVERAL DAYS.
Q. HANG ON A SECOND.
PLEASE, I AM NOT TRYING TO BE RUDE, BUT I AM TRYING TO GET THIS IN SOME BITE-SIZED CHUNKS HERE AND TO MAKE A COUPLE POINTS.
WHAT IF I SAID TO YOU THAT IF SOMEONE STOPPED SMOKING FOR AS LITTLE AS A COUPLE

1927

DAYS, AND I DON'T KNOW WHETHER IT IS TWO DAYS OR THREE DAYS, BUT JUST FOR THE HECK OF IT, LET'S MAKE IT SEVEN DAYS, ALL OF THE NICOTINE IN A PERSON'S BODY IS GONE, AND BECAUSE ALL THE NICOTINE IN A PERSON'S BODY HAD GONE, IT IS AS IF THAT PERSON NEVER SMOKED, AND THE NEXT TIME THAT PERSON PICKS UP A CIGARETTE, DOESN'T MATTER IF HE EVER SMOKED BEFORE OR SHE EVER SMOKED BEFORE, IT'S FREE WILL, IT IS A BRAND NEW BALL GAME. WE ARE STARTING ALL OVER.
DOES THAT SOUND RIGHT TO YOU?
A. IT IS ABSOLUTELY WRONG.
FIRST, LET ME JUST SAY THAT NICOTINE DOES SOME THINGS TO THE BRAIN THAT LAST A LONG TIME. WE DON'T UNDERSTAND THEM.
THERE ARE STUDIES IN RATS WHERE IF

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YOU GIVE A RAT NICOTINE, IT HAS A CERTAIN EFFECT, THEY BECOME TOLERANT TO IT. SO AFTER AWHILE THE BODY GETS USED TO IT.

YOU CAN THEN TAKE NICOTINE AWAY FROM THAT RAT FOR A YEAR, GIVE THEM NICOTINE A YEAR LATER AND THE RAT IS STILL TOLERANT TO SOME EFFECTS.

SO THEY ARE VERY LONG-STANDING CHANGES. THE BRAIN OF A SMOKER IS NEVER FULLY THE SAME AS A NEVER SMOKER.

BUT A NEVER SMOKER STARTS SMOKING, IN THE BEGINNING, THEY GET SICK OFTEN, LIKE

1928

NAUSEATED, THEY DON'T FEEL GOOD. IT TAKES AWHILE TO BE ABLE TO TOLERATE NICOTINE.

A SMOKER WHO STARTS SMOKING AGAIN AFTER EVEN SEVERAL YEARS OF QUITTING, CAN OFTEN START AND WITHIN A FEW DAYS, CAN BE BACK UP TO A PACK A DAY OR MORE.

SO IT'S CLEARLY DIFFERENT.

THE WITHDRAWAL THAT PEOPLE HAVE OR THE URGE FOR CIGARETTES LASTS FOR A VERY LONG TIME. PART OF IT IS WHAT'S CALLED CONDITION OR TRIGGER.

FOR EXAMPLE, IF YOU HAVE BEEN SMOKING FOR 20 YEARS AND YOU KNOW WHEN YOU GET STRESSED, A CIGARETTE HELPS YOU FIGHT STRESS, WHEN YOU GET DEPRESSED, A CIGARETTE MAKES YOU FEEL BETTER.

EVEN SIX MONTHS LATER AFTER YOU QUIT, THE FIRST TIME YOU GET STRESSED YOU WILL SAY, BOY, I WISH I HAD A CIGARETTE, I KNOW I WOULD FEEL BETTER.

THAT DOESN'T GO AWAY IN TWO WEEKS. THERE IS NOTHING YOU CAN DO WITH THE PRESENT NICOTINE IN YOUR BODY. IT HAS TO DO WITH -- THE BRAIN IN THE SMOKER HAS DIFFERENT MEMORIES, DIFFERENT CONNECTIONS AND THEY ARE ALWAYS VULNERABLE TO RELAPSE, BUT ESPECIALLY THE FIRST YEAR.

SO TO GO BACK TO WHAT I WAS SAYING BEFORE, EVEN IF EVERYONE HAS QUIT FOR A WEEK, BY

1929

SIX MONTHS ONLY 25 PERCENT HAVE QUIT. SO 75 PERCENT HAVE RELAPSED AGAIN. AND BY A YEAR YOU ARE PROBABLY DOWN TO 15 PERCENT WHO HAVE REALLY QUIT.

SO IT DOESN'T MATTER IF NICOTINE IS PRESENT OR NOT. YOU ARE AT RISK TO RELAPSE FOR AS LONG AS A YEAR AFTER QUITTING.

Q. THANKS. YOU USED A TERM SEVERAL TIMES, I FORGET WHAT IT IS, BUT I WANT TO SPEND A MINUTE ON IT, THE RAT THAT USED TO HAVE THE NICOTINE AND HASN'T HAD THE NICOTINE FOR A YEAR, AND THEN AFTER THE YEAR, GETS THE NICOTINE, WHAT ABOUT THAT RAT, THE RAT --

A. WELL, WHAT I SAID IS, THERE ARE CERTAIN EFFECTS THAT DEVELOP IN A RAT, CERTAIN EFFECTS ON MOVEMENT AND BEHAVIOR. AND IF YOU GIVE THEM NICOTINE SEVERAL TIMES, THE RAT GETS USED TO IT.

THEY BECOME WHAT WE CALL TOLERANT TO IT.

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Q. TOLERANT?
A. AND SO THAT RAT IS DIFFERENT BECAUSE IT HAS NICOTINE.
Q. SO THAT'S THE WORDS I WAS LOOKING FOR, TOLERANT.
DEFINE IT, TOLERANT.
A. TOLERANCE MEANS THAT, AFTER YOU HAVE GOT A DRUG, AFTER YOU HAVE BEEN EXPOSED TO A DRUG, THE NEXT TIME YOU GET IT, YOU HAVE LESS OF AN

1930

AFFECT THAN YOU HAD BEFORE.
A GOOD EXAMPLE OF THIS THAT MOST PEOPLE KNOW IS COFFEE AND CAFFEINE. IF YOU DRINK COFFEE ALL DAY LONG, YOUR BRAIN GETS TOLERANT TO IT AND YOU CAN SLEEP AT NIGHT, YOU CAN DO THIS EVERY DAY.
BUT IF YOU ARE SOMEONE WHO DOESN'T DRINK COFFEE AND YOU HAVE A CUP OF COFFEE AT NIGHT, THEN YOU CAN'T SLEEP THAT NIGHT BECAUSE YOUR BRAIN IS NOT TOLERANT TO IT OR IF YOU ARE A PERSON WHO ONLY HAS COFFEE IN THE MORNING AND THEN YOU HAVE A CUP OF COFFEE BEFORE BED, YOU CAN'T SLEEP.
BUT SOMEONE ELSE WHO ALWAYS HAS A CUP OF COFFEE BEFORE BED CAN SLEEP JUST FINE. IT IS BECAUSE THE BODY ADAPTS AFTER EXPOSING IT. THE SAME THING HAPPENS WITH NICOTINE.
Q. LET'S GO BACK TO THE RAT.
AFTER ONE WHOLE YEAR OF BEING AWAY FROM NICOTINE -- FORGET TWO DAYS OUT OF THE BODY, THREE DAYS OUT OF THE BODY, SEVEN DAYS OUT OF THE BODY, WE ARE TALKING 365 DAYS OUT OF THE BODY, THIS RAT IS STILL TOLERANT TO NICOTINE?
A. TO SOME EFFECT, YES.
Q. I WANT TO TALK ABOUT YOU AGAIN NOW, A BIT.
YOU HAVE TOLD US YOU ARE A MEDICAL DOCTOR, YOU ARE AN INTERNIST, YOU ARE A CARDIOLOGIST, BUT EARLIER ON, YOU TOLD US YOU WERE

1931

A PROFESSOR OF WHAT, PHARMACOLOGY?
A. NOW, WELL, INTERNAL MEDICINE, AND IT IS PSYCHIATRY AND BIOPHARMACEUTICAL SCIENCES.
Q. BIOPHARMACEUTICAL SCIENCES?
A. YES.
Q. PLEASE TALK ABOUT, LET'S START OFF WITH WHAT IS THAT, BIOPHARMACEUTICAL SCIENCES?
A. WELL, THIS IS A DEPARTMENT THAT'S PART OF THE SCHOOL OF PHARMACY AT U.C.S.F., WHICH IS, IS VERY MUCH INVOLVED IN DRUG RELATED RESEARCH AS WELL.
BIOPHARMACEUTICAL SCIENCES IS REALLY THE SCIENCE OF DRUG DEVELOPMENT. AND THE SCHOOL OF PHARMACY, THERE ARE DOCTORAL PROGRAMS, A LOT OF RESEARCHERS STUDYING THE DEVELOPMENT OF NEW DRUGS, HOW DRUGS WORK, THE PROPER WAY TO DOSE DRUGS, ET CETERA.
AND BECAUSE I DO A LOT OF WORK WHICH DEALS WITH DRUG DEVELOPMENT ISSUES, INCLUDING NICOTINE, BECAUSE I WAS INVOLVED IN THE DEVELOPMENT OF A LOT OF THE DRUGS THAT ARE USED TO HELP SMOKERS TO QUIT, I AM INVOLVED IN TEACHING IT AND I AM

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ACTUALLY VICE-CHAIRMAN OF THAT DEPARTMENT IN CHARGE OF THE CLINICAL PHARMACOLOGY, THE CLINICAL RESEARCH PART OF IT.

Q. YOU SAID PSYCHIATRY TOO. ARE YOU A PSYCHIATRIST?

A. NO, I AM NOT A PSYCHIATRIST. MY

1932

APPOINTMENT IN PSYCHIATRY IS BECAUSE MOST ADDICTION MEDICINE IS HOUSED IN DEPARTMENTS OF PSYCHIATRY. AND BECAUSE I DO WORK IN ADDICTION MEDICINE AND I TEACH A LOT IN THAT AREA, I HAVE AN APPOINTMENT IN THAT DEPARTMENT.

Q. SO ALTHOUGH YOU ARE NOT A PSYCHIATRIST, YOU ARE A PROFESSOR OVER IN THE PSYCHIATRY DEPARTMENT?

A. YES.

Q. OKAY. IS HEROIN MORE ADDICTIVE THAN NICOTINE?

A. WELL, MOST PEOPLE WOULD THINK THAT. THE ANALYSIS THAT WE CAME UP WITH IN OUR SURGEON GENERAL'S REPORT WAS THAT IT IS NOT. IN FACT, NICOTINE IS SIMILAR TO HEROIN AND COCAINE. THAT WAS ONE OF THE CONCLUSIONS OF THE A.D.A. REPORT, IN TERMS OF THE ADDICTION PROCESSES, AND THE STRENGTH OF THE ADDICTION, THAT, IN FACT, NICOTINE WAS SIMILAR TO HEROIN AND COCAINE.

NOW, I SHOULD EXPLAIN THAT, BECAUSE MOST PEOPLE THINK THAT DOESN'T MAKE SENSE, IF YOU ARE THINKING ABOUT THE INTOXICATION. BECAUSE PEOPLE USE HEROIN AND COCAINE, THEY GET INTOXICATED. THEY CAN'T FUNCTION, THEY HAVE SEVERE WITHDRAWAL SYMPTOMS.

NICOTINE DOESN'T WORK THE SAME WAY. WITH NICOTINE, YOU CAN FUNCTION, YOU CAN WORK, AND THE WITHDRAWAL SYMPTOMS, WHILE THEY CAN BE VERY

1933

DISRUPTIVE SO PEOPLE CAN'T FUNCTION FORMALLY, THEY ARE NOT LIFE-THREATENING. YOU DON'T HAVE CONVULSIONS LIKE YOU DO WITH ALCOHOL WITHDRAWAL, FOR EXAMPLE.

BUT WHAT'S SIMILAR ABOUT IT IS THAT IF YOU LOOK AT QUITTING, HOW HARD IS IT TO QUIT. THE QUIT RATES ARE VERY COMPARABLE FOR THOSE THREE DRUGS.

IF YOU DO RESEARCH, THIS HAS BEEN DONE WITH PEOPLE WHO SMOKE CIGARETTES AND USE DRUGS AND ALCOHOL, AND YOU ASK THEM WHICH DRUG WOULD BE THE HARDEST ONE FOR YOU TO GIVE UP, MORE THAN HALF -- THESE ARE HEROIN ADDICTS OR ALCOHOLICS, MORE THAN HALF SAY SMOKING WOULD BE THE HARDEST THING TO GIVE UP, HARDER THAN THE HEROIN, HARDER THAN ALCOHOL.

IF YOU LOOK AT THE NUMBER OF PEOPLE WHO USE DIFFERENT DRUGS AND ARE ADDICTED TO IT, FOR CIGARETTES, PROBABLY 85 PERCENT OF SMOKERS HAVE SOME AMOUNT OF ADDICTION. SMOKE EVERY DAY AND HAVE SOME LEVEL OF ADDICTION.

FOR ALCOHOL, IT'S ONLY 20 PERCENT OF MEN AND 4 PERCENT OF WOMEN HAVE AN ALCOHOL ABUSE PROBLEM. THE OTHER ONES JUST DRINK, BUT IF THEY CAN'T DRINK ONE DAY, IT'S NOT A PROBLEM, THEY HAVE

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NO ABUSIVE PROBLEMS, NO ADDICTION PROBLEM.
HEROIN AND COCAINE, THE DATA AREN'T
QUITE AS CLEAR, BUT THERE IS EVIDENCE THAT AS MANY

1934

AS 50 PERCENT OF PEOPLE WHO USE HEROIN USE IT ONLY
OCCASIONALLY. SO THEY GO TO PARTIES OR THEY CHIP
AND THE SAME IS TRUE FOR COCAINE.
SO FOR THE PERCENTAGE OF USERS, FOR
THESE VARIOUS DRUGS, THE NUMBER WHO USE NICOTINE
EVERY DAY, EVERY SINGLE DAY, IS MUCH HIGHER THAN
ANY OTHER DRUG.
SO FROM THAT PERSPECTIVE, NICOTINE
EVEN LOOKS MORE ADDICTIVE.
Q. TWO POINTS, ONE OF A SMALL SIDE
POINT WHICH MAY COME UP LATER.
YOU USED THE WORD "CHIP."
I KNOW WHAT IT MEANS BUT WHAT DOES
IT MEAN THE WAY YOU USED IT IN THE WAY YOU USED IT?
A. THAT'S A WORD WHICH HAS BEEN USED
FOR HEROIN AND ACTUALLY HAS BEEN USED FOR
CIGARETTES TOO. SOMEONE WHO OCCASIONALLY USES THE
DRUG, IS NOT ADDICTED TO, IS NOT DEPENDENT ON, BUT
OCCASIONALLY USES IT.
AND WE USE THAT FOR PEOPLE WHO
SMOKE FIVE OR FEWER CIGARETTES PER DAY, WHO DON'T
SMOKE EVERY SINGLE DAY.
SO IT'S CALLED CHIPPERS, YOU KNOW,
A JARGON. BUT IT REALLY DEALS WITH PEOPLE WHO
OCCASIONALLY USE DRUGS AND DON'T SEEM TO BE
ADDICTED TO THE DRUG.
Q. AND THE SECOND POINT I STOPPED YOU
FOR IS THIS, WITH ALCOHOL, THE VAST MAJORITY OF

1935

PEOPLE WHO USE ALCOHOL HAVE NO ADDICTION PROBLEM
WHATSOEVER?
A. CORRECT.
Q. AND WHAT DID YOU SAY THAT IT WAS,
THAT IT WAS 80 PERCENT OF MEN AND 95 PERCENT OF
WOMEN, SOMETHING LIKE THAT?
A. YES.
Q. HAVE NO ADDICTION PROBLEM
WHATSOEVER WITH ALCOHOL?
A. YES.
Q. WITH NICOTINE, IS IT BASICALLY
FLIPPED OVER, SO THAT, DID YOU SAY 85 PERCENT OF
PEOPLE HAVE SOME ADDICTION PROBLEM WITH IT?
A. YES.
Q. SO WITH ALCOHOL, 20 DO HAVE
ADDICTION PROBLEMS -- LET'S JUST TALK MEN, 20 DO,
80 DON'T, WITH NICOTINE?
A. RIGHT.
Q. WITH NICOTINE, 15 DON'T AND 85 DO?
A. YES.
Q. HAVE A PROBLEM OF SOME SORT OF
ADDICTION?
A. YES.
Q. OKAY, THANK YOU.
THE COURT: AT THIS POINT --
MR. PIUZE: YES.
THE COURT: ALL RIGHT, IT'S QUARTER TO
11, WE WILL TAKE A BREAK UNTIL 11 O'CLOCK.

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1936

AND MS. GARRETT, I DON'T KNOW WHY I DIDN'T NOTICE THIS BEFORE, I SHOULD HAVE, BUT YOU ARE IN A POSITION WHERE IT IS JUST VERY DIFFICULT FOR YOU TO SEE. AND WHEN YOU COME BACK, WE ARE GOING TO HAVE YOUR SEAT MOVED FROM WHERE YOU ARE RIGHT UP HERE OVER HERE TO THE SIDE, SO THAT I THINK YOU WILL BE ABLE TO SEE THIS MUCH BETTER. OKAY.

(THE FOLLOWING PROCEEDINGS WERE HELD IN OPEN COURT IN THE PRESENCE OF THE JURY.)

NEAL BENOWITZ,
CALLED AS A WITNESS BY THE PLAINTIFF, HAVING BEEN PREVIOUSLY DULY SWORN, RESUMED THE WITNESS STAND AND TESTIFIED FURTHER AS FOLLOWS:

THE COURT: SIR, YOU MAY BE SEATED.
MR. PIUZE: THANK YOU.
THE COURT: MR. PIUZE.

DIRECT EXAMINATION (RESUMED)

BY MR. PIUZE:
Q. I WANT TO SWITCH SUBJECTS SOMEWHAT. BUT THIS WILL ENTAIL GOING BACKWARDS A LITTLE. REMEMBER, YOU TOLD THE JURY ABOUT,

1937

YOU WOULD FIND A SMOKER WHO TYPICALLY HAD, I FORGET WHAT YOU SAID, MAYBE 30 CIGARETTES A DAY, THAT WAS THE USUAL LEVEL, YOU CUT THE SMOKER DOWN TO 15 A DAY, AND ULTIMATELY BOTTOM LINE WAS YOU FOUND OUT THE SMOKER DID SOMETHING SOMEHOW WITH THE CIGARETTES SO THE SMOKER WOUND UP GETTING THE SAME AMOUNT OF NICOTINE OUT OF THE 15 CIGARETTES THAT HE OR SHE HAD GOTTEN OUT OF 30. REMEMBER THAT?
A. YES.
Q. ARE YOU FAMILIAR WITH THE TERM "COMPENSATION"?
A. YES.
Q. DOES THE TERM "COMPENSATION" FIT WITH, WITH OR FIT INTO AN EXPLANATION OF HOW THAT CAN BE?
A. YES.
Q. HOW? WHY, PLEASE.
A. WELL, TO GO BACK TO THE STORY OF PEOPLE SMOKING FOR NICOTINE, PEOPLE TEND TO SMOKE CIGARETTES IN THE MORNING, HAVE A BIGGER EFFECT IN THE MORNING, BECOME TOLERANT TO THE EFFECTS THROUGHOUT THE DAY, END UP SMOKING CIGARETTES BECAUSE THEY FEEL DISCOMFORT AND WITHDRAWAL AND END UP SMOKING CIGARETTES TO DEAL WITH, WITH MOOD DISTURBANCES, WITH STRESS, WITH NEEDING TO BE STIMULATED OR RELAXED.
AND WHAT IS FOUND IS THAT PEOPLE TEND TO TAKE IN ABOUT THE SAME AMOUNT OF NICOTINE

1938

DAY AFTER DAY.

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SO PEOPLE'S BODIES SEEM TO NEED A CERTAIN AMOUNT OF NICOTINE. IT VARIES FROM PERSON TO PERSON. BUT WE THINK IT HAS TO DO WITH DEALING FOR -- SMOKING FOR CERTAIN SITUATIONS AND THEN TOLERANCE AND THINGS LIKE THAT.

RESEARCH HAS BEEN DONE SHOWING THAT IF YOU TRY TO CHANGE THE AMOUNT OF NICOTINE THAT'S AVAILABLE TO A SMOKER, THEY WILL CHANGE THEIR BEHAVIOR TO TRY TO BRING IT BACK TO THEIR USUAL LEVEL.

SO THE IDEA WITH THE CIGARETTE PRODUCTION STUDY WAS THAT, SAY, IF PEOPLE NORMALLY TAKE IN, SAY, 30 MILLIGRAMS OF NICOTINE A DAY, WHICH IS WHAT PEOPLE SMOKING 30 CIGARETTES WOULD TAKE, WE COULD CUT THEM DOWN TO 15 CIGARETTES AND THEY WOULD BE TAKING IN ALMOST THE SAME AMOUNT OF NICOTINE PER DAY. THEIR BODY SEEMS TO NEED A CERTAIN AMOUNT.

NOW, THEY DO IT BY TAKING TWICE AS MUCH PUFFS FROM EACH CIGARETTE OR BIGGER PUFFS AND MORE PUFFS.

BUT BECAUSE THERE'S A LOT OF FLEXIBILITY AND WHAT YOU CAN GET FROM A CIGARETTE, YOU CAN REALLY ADJUST QUITE A BIT.

SO, SAY, THE NORMAL CIGARETTE GIVES A SMOKER ONE MILLIGRAM OF NICOTINE, WE FOUND THAT PEOPLE WHO CUT DOWN TO FIVE CIGARETTES WERE GETTING

1939

THREE MILLIGRAMS PER CIGARETTE. SO THREE TIMES AS MUCH BY TAKING MUCH BIGGER PUFFS AND MORE PUFFS PER CIGARETTE.

THEY COULDN'T QUITE COMPENSATE. FULL COMPENSATION MEANS THAT NO MATTER WHAT YOU GET, NO MATTER HOW MANY CIGARETTES, YOU HAVE THE SAME AMOUNT OF NICOTINE.

WELL, HERE, THEY COULDN'T FULLY COMPENSATE BECAUSE YOU COULDN'T GO FROM 30 TO 5 AND GET ENOUGH NICOTINE, NO MATTER WHAT YOU DO.

WE FOUND PRETTY SUBSTANTIAL COMPENSATION SO THAT 10 CIGARETTES PER DAY PEOPLE HAD ABOUT 80 PERCENT OF WHAT THEY HAD FROM 30.

Q. WHEN DID YOU FIND THIS OUT?

A. I THINK WE PUBLISHED THIS WORK IN THE MID-1980'S.

Q. SO WE ARE TALKING 15 YEARS AGO?

A. YES.

Q. DID YOU PUBLISH IT IN SOME OBSCURE OFF-SHORE JOURNAL IN --

A. NO. THIS WORK WAS PUBLISHED IN THE "NEW ENGLAND JOURNAL OF MEDICINE" WHICH IS PROBABLY THE TOP RECOGNIZED JOURNAL IN THE WORLD.

Q. WE HAD HEARD FROM A NUMBER WITNESS WHO MIGHT HAVE HAD A SLIGHTLY BRITISH BIAS THAT THE "LANCET" IN ENGLAND AND THE "NEW ENGLAND JOURNAL" OF MEDICINE IN AMERICA WERE PROBABLY THE TOP MEDICAL JOURNALS IN THE WORLD.

1940

DOES THAT SOUND ABOUT RIGHT TO YOU?

A. YES.

Q. AND THIS WORK THAT YOU JUST MENTIONED, ON COMPENSATION, WAS PUBLISHED IN THE

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"NEW ENGLAND JOURNAL OF MEDICINE," 15 OR SO YEARS AGO?
A. YES.
Q. WE HAD ANOTHER WITNESS HERE, THIS DR. FARONE. YOU KNOW HIM?
A. YES.
Q. AND HE TALKED ABOUT THE ISSUE OF, HE TALKED ABOUT MANY ISSUES. BUT ONE OF THE ISSUES HE TALKED ABOUT WAS THE FACT THAT FROM A FULL --
MR. CARLTON: OBJECT TO THE RECHARACTERIZATION OF THE TESTIMONY.
THE COURT: SUSTAINED.
Q BY MR. PIUZE: CAN I TRY THIS HYPOTHETICALLY, YOUR HONOR?
THE COURT: WELL, YOU COULD NAME A TOPIC. I WILL LET YOU DO THAT. JUST DON'T DESCRIBE CONCLUSIONS.
MR. PIUZE: OKAY, THAT'S FINE.
Q BY MR. PIUZE: WE HAD A DISCUSSION HERE, YOU WEREN'T HERE, BUT THE DISCUSSION HAD TO DO WITH THE FACT THAT --
MR. CARLTON: SAME OBJECTION.
THE COURT: OVERRULED.
TOPIC, PLEASE.

1941

Q BY MR. PIUZE: YEAH. THE TOPIC IS THAT THE AMOUNT OF TAR THAT A PERSON CAN GET OUT OF SORT OF A FULL TAR CIGARETTE, A REDUCED TAR CIGARETTE, ULTRA REDUCED TAR CIGARETTE, STRANGELY ENOUGH, TURNS OUT TO BE ABOUT THE SAME IN THE END BECAUSE OF COMPENSATION.
ARE YOU FAMILIAR WITH THAT CONCEPT?
A. YES.
Q. IS THAT THE SAME CONCEPT THAT APPLIES TO THE NICOTINE ALSO?
A. YES.
Q. HAVE YOU WRITTEN ON THE FACT THAT REGARDLESS OF WHETHER SOMETHING IS CALLED A REGULAR OR A LIGHT OR AN ULTRA LIGHT, THAT IN THE END, THE SMOKER IS GOING TO WIND UP WITH ROUGHLY THE SAME AMOUNT OF NICOTINE?
A. YES.
Q. NOW, ARE LIGHT CIGARETTES, AS ADDICTIVE, GENERALLY, AS FULL STRENGTH CIGARETTES?
A. YES. FOR THE REASONS OF COMPENSATION, OUR RESEARCH HAS SHOWN THAT SMOKERS TAKE IN VIRTUALLY THE SAME AMOUNT OF NICOTINE FROM A LOW YIELD CIGARETTE THAN A HIGH YIELD CIGARETTE.
AND IT'S BECAUSE -- THIS WAS WORK WE DID EVEN BEFORE THE CIGARETTE REDUCTION STUDY. WE PUBLISHED THIS IN "NEW ENGLAND JOURNAL OF MEDICINE," 1983, THAT SURVEYING SMOKERS SMOKING A WIDE RANGE OF BRANDS, FROM NICOTINE YIELDS OF .1

1942

MILLIGRAM TO 1.6 MILLIGRAMS, THAT THEIR LEVELS OF NICOTINE INTAKE WERE THE SAME, DIDN'T MATTER.
THEY WOULD TAKE IN THE SAME AMOUNT OF NICOTINE, NO MATTER WHAT BRAND THEY WERE TAKING.
WE ALSO FOUND SOMETHING THAT WAS A SURPRISE TO ME AT THE TIME, BUT I THINK CAN HELP PEOPLE UNDERSTAND WHAT HAPPENED, LOW YIELD

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CIGARETTES DON'T CONTAIN LESS OF ANYTHING. I THINK IT CONTAINS -- LESS TAR AND NICOTINE.

WE MEASURED THE TOBACCO OF CIGARETTES OF MANY DIFFERENT YIELDS, HIGH TO LOW YIELD CIGARETTES IN 1983 AND FOUND, TO MY SURPRISE, AT THE TIME, THAT THE NICOTINE IN A LOW YIELD CIGARETTE IS EXACTLY THE SAME AS A HIGH YIELD CIGARETTE, THE TOBACCO IS THE SAME.

WHAT MAKES THEM LOW YIELD HAS TO DO WITH HOW THEY ARE ENGINEERED AND HOW THOSE ENGINEERING CHARACTERISTICS EFFECT HOW THEY ARE TESTED ON THE MACHINE.

BUT THERE'S THE SAME AMOUNT OF TOBACCO AND THE SAME AMOUNT OF NICOTINE IN THE LOW YIELD AS HIGH YIELD CIGARETTES. AND SMOKERS CAN EASILY, BY SMOKING DIFFERENTLY THAN THE MACHINES, GET WHATEVER NICOTINE THEY NEED.

AND WITH NICOTINE COMES TAR. THERE'S A GOOD CORRELATION AND RELATIONSHIP BETWEEN NICOTINE AND TAR.

SO IF YOU COMPENSATE FOR NICOTINE,

1943

YOU GET JUST AS MUCH TAR AS WITHOUT.

Q. SO I DON'T BOTHER ASKING THE LAST QUESTION BECAUSE ONCE YOU GO FROM LIGHTS TO ULTRA LIGHTS, IT IS THE SAME STORY ALL OVER AGAIN?

A. YES. THE ONLY CIGARETTES WE FOUND THAT WERE ANY DIFFERENT WERE THE VERY LOWEST BRANDS OF CIGARETTES WHICH WERE THE 0.1 MILLIGRAM OR 1 MILLIGRAM TAR. AND JUST A COUPLE BRANDS OF THOSE AND THEY COUNT FOR A VERY SMALL PERCENTAGE OF TOTAL SALES.

WHAT WE FOUND WITH THOSE IS ABOUT A 30 PERCENT REDUCTION OF EXPOSURE.

BUT FOR EVERYTHING ELSE, THERE WAS PRETTY MUCH A FLAT LINE, NO RELATIONSHIP IN THAT STUDY BETWEEN YIELD AND EXPOSURE.

Q. OKAY. THANK YOU. HERE'S A NEW SUBJECT AGAIN.

WHAT IS UP ON THE SCREEN HERE IS DATED APRIL 14, AND WHAT'S ON THE SCREEN HERE, IS FROM THE "NEW YORK TIMES" OF APRIL 14, 1994 -- EXCUSE ME, APRIL 15 IS THE DAY THIS WAS PUBLISHED, 1994.

AND THIS PARTICULAR STORY, THE DATELINE ON THE STORY IS THE DAY BEFORE, APRIL 14, 1994. AND THE STORY OBVIOUSLY HAS TO DO WITH SEVEN EXECUTIVES OF THE TOBACCO COMPANIES TESTIFYING BEFORE CONGRESS. AS THE JURY HAS BEEN SHOWN ALREADY HERE, ONE OF THE THINGS THEY SAID WAS THAT

1944

CIGARETTES AREN'T ADDICTIVE.

SO JUST FOR OPENERS, YOU ARE GENERALLY FAMILIAR WITH THAT TESTIMONY THAT OCCURRED?

A. I AM VERY FAMILIAR WITH THAT TESTIMONY.

Q. NOW, ON PAGE 11, I AM GOING TO START AT THE BOTTOM HERE FOR OBVIOUS REASONS AND THEN WORK MY WAY UP.

BUT ON PAGE 11 OF THE "NEW YORK

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TIMES," THAT DAY, APRIL 15, 1994, PHILIP MORRIS U.S.A. RAN A, I DON'T KNOW, IT LOOKS TO ME TO BE LIKE A TWO-THIRDS PAGE AD, I HAVE SHOWED YOU THIS BEFORE EARLIER TODAY?

A. YES.

Q. AND THE TWO-THIRDS PAGE AD FROM APRIL 15, 1994, WAS ENTITLED:

"SMOKERS AND NON-SMOKERS, FACTS YOU SHOULD KNOW.

"BOTH SMOKERS AND NON-SMOKERS DESERVE TO KNOW FACTS NOT INNUENDO ABOUT CIGARETTES. YESTERDAY PHILIP MORRIS AND OTHER U.S. TOBACCO MANUFACTURERS HELPED TO SET THE RECORD STRAIGHT BY SPEAKING BEFORE CONGRESSIONAL COMMITTEE. FOR YOUR CONSIDERATION HERE ARE HIGHLIGHTS OF THE INFORMATION PRESENTED BY PHILIP

1945

MORRIS IN THAT SESSION."

SO I WANT TO GO TO THE FACT THAT SECOND FROM THE BOTTOM THERE, AND THE ONE I AM INTERESTED IN IS THE ONE ON TOP.

"FACT: PHILIP MORRIS DOES NOT BELIEVE CIGARETTE SMOKING IS ADDICTIVE. PEOPLE CAN AND DO QUIT SMOKING ALL THE TIME. ACCORDING TO THE 1988 SURGEON GENERAL'S REPORT, THERE ARE MORE THAN 40 MILLION FORMER SMOKERS IN THE UNITED STATES AND 90 PERCENT QUIT ON THEIR OWN WITHOUT ANY OUTSIDE HELP."

I WANT TO DISCUSS THOSE SENTENCES WITH YOU STARTING AS FOLLOWS: PHILIP MORRIS IS QUOTING THE 1988 SURGEON GENERAL'S REPORT TO BOLSTER ITS VIEWS ON ADDICTION.

NOW, IS THE 1988 SURGEON GENERAL'S REPORT THE ONE WHERE YOU WERE ONE OF FOUR SCIENTIFIC EDITORS ON ADDICTION?

A. YES.

Q. DID THE 1988 SURGEON GENERAL'S REPORT SAY THAT THERE ARE MORE THAN 40 MILLION FORMER SMOKERS IN THE UNITED STATES?

A. I THINK SO. I DON'T REMEMBER THE EXACT NUMBER BUT THAT'S PROBABLY CORRECT.

Q. WELL, IF THAT'S CORRECT, DOESN'T THAT BOLSTER THE CLAIM THAT PHILIP MORRIS DOES NOT

1946

BELIEVE CIGARETTE SMOKING IS ADDICTIVE?

A. NO. IT DOES NOT, AT ALL.

THE ISSUE OF ADDICTION RELATES TO A PROBLEM CONTROLLING DRUG USE. IT MEANS THAT WHEN YOU BECOME UNDER THE INFLUENCE OF A DRUG, THEN IT'S DIFFICULT TO CHANGE THAT USE, TO STOP USE.

IT DOESN'T MEAN ONE CAN'T QUIT. AND THIS IS TRUE FOR ALL DRUGS OF ABUSE OR ALL ADDICTING DRUGS. IT MEANS THAT IT IS OFTEN QUITE DISRUPTIVE TO YOUR LIFE AND DIFFICULT. WE KNOW NOW, AND IT WAS KNOWN BACK IN 1988, THAT THE VAST MAJORITY OF SMOKERS, 70 PERCENT OF SMOKERS, SAY THAT THEY WOULD LIKE TO QUIT SMOKING, AT THIS TIME.

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AND IT WAS TRUE BACK IN '88 AS WELL.
35 PERCENT OF SMOKERS SAY THEY HAVE OR HAVE HAD EVIDENCE OF QUITTING FOR AT LEAST A DAY EACH YEAR BECAUSE THEY WANT TO TRY TO QUIT.
THE PERCENT WHO SUCCESSFULLY QUIT ARE ABOUT TWO AND A HALF PERCENT.
SO MOST SMOKERS SAY THEY WOULD LIKE TO BE NON-SMOKERS. MANY TRY TO QUIT AND VERY FEW SUCCEED.
NOW, MOST WHO WANT TO QUIT ULTIMATELY DO SUCCEED BUT ON AVERAGE IT TAKES FOUR TO FIVE QUIT ATTEMPTS.
NOW, THAT DOESN'T MEAN THAT PEOPLE HAVEN'T QUIT AND THEY HAVEN'T QUIT ON THEIR OWN. IT MEANS THAT IT'S A VERY DIFFICULT PROCESS, IT

1947

TAKES A LONG TIME. MANY PEOPLE SMOKE FOR MUCH LONGER THAN THEY WOULD LIKE TO. AND THIS CONCEPT OF ADDICTION, MEANING LOSS OF CONTROL OF DRUG USE, AND THESE SORT OF NUMBERS ARE THE SAME AS FOR OTHER DRUGS OF ABUSE.

Q. WELL, LET ME STOP YOU THERE, BECAUSE THAT'S WHAT I HAD INTENDED TO DO, SO LET ME DO IT.

LET'S JUST CHANGE THESE WORDS JUST TO SEE IF THIS FITS. LET'S FORGET PHILIP MORRIS NOW. PHILIP MORRIS IS OUT OF THIS CASE.
ALCOHOL IS NOT ADDICTIVE BECAUSE PEOPLE HAVE GONE TO A.A. AND QUIT AND SO ALCOHOL ISN'T ADDICTIVE.
NOW, WOULD YOU THINK THAT'S GOOD LOGIC?

A. NO.

Q. HEROIN ISN'T ADDICTIVE BECAUSE PEOPLE HAVE USED HEROIN AND QUIT IT AND THEREFORE, HEROIN ISN'T ADDICTIVE. IS THAT BALONEY?

A. YES.

Q. LET'S GO TO THE NEXT ONE. AND THE FOCUS IS, "90 PERCENT -- PHILIP MORRIS DOES NOT BELIEVE CIGARETTE SMOKING IS ADDICTIVE. 90 PERCENT OF PEOPLE WHO QUIT, QUIT ON THEIR OWN, WITHOUT OUTSIDE HELP."
NOW, DO YOU HAVE SOME KNOWLEDGE ABOUT OUTSIDE HELP AND EVIDENCE OF QUITTING?

1948

A. YES.

Q. TELL THE JURY, PLEASE.

A. WELL, THERE ARE WHAT ARE CALLED BEHAVIORAL AIDS LIKE GETTING COUNSELING OR JOINING A SMOKING GROUP OR SMOKE ENDERS OR SMOKERS ANONYMOUS. THOSE ARE ALL BEHAVIORAL COUNSELING.
THEN THERE ARE MEDICATIONS, NICOTINE PATCHES, NICOTINE GUM, NICOTINE NASAL SPRAY. ZYBAN IS A NEW MEDICATION.
AND THEN THERE ARE OTHER THINGS PEOPLE TRY, HYPNOSIS, ACUPUNCTURE.
IN FACT, THERE ARE HUNDREDS OF THINGS THAT HAVE BEEN DESCRIBED OVER THE YEARS TO TRY TO HELP SMOKERS QUIT WHICH, I THINK, GIVES AN IDEA THAT IT IS NOT AN EASY THING. THERE WOULDN'T BE SO MANY ORGANIZATIONS AND SO MANY MEDICATIONS

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AVAILABLE TO HELP PEOPLE QUIT SMOKING IF IT WAS JUST A MATTER OF MAKING UP THEIR MIND TO JUST QUIT AND STOP IT.

MANY PEOPLE TRY DIFFERENT SORTS OF THINGS BEFORE THEY CAN QUIT.

Q. I WANT TO PUT THE SPOTLIGHT BACK ON YOU AND YOUR BACKGROUND AND QUALIFICATIONS NOW, AT LEAST FOR A LITTLE WHILE.

HAVE YOU HAD SOME BACKGROUND AND EXPERIENCE IN REGARD TO THE NICOR -- WHATEVER -- THE GUM OR THE PATCHES OR THE REPLACEMENT, NICOTINE REPLACEMENT STUFF THAT SOME PEOPLE USE AND TRY TO

1949

USE?

A. YES.

Q. EXPLAIN, PLEASE.

A. WELL, WE DO A LOT OF WORK STUDYING EFFECTS OF NICOTINE IN PEOPLE, STUDYING THE TIME COURSE, THE EFFECTS, THE ABSORPTION LEVELS IN THE BODY.

AND WE DID MANY OF THE STUDIES THAT THE FOOD AND DRUG ADMINISTRATION RELIED UPON FOR DOSING GUIDELINES, FOR SAYING WHAT DOSE A PATCH GIVES, FOR EXAMPLE.

A LOT OF IT WAS DONE IN MY LABORATORY.

Q. IS THERE SOMETHING -- WHY CAN'T A PERSON JUST USE A PATCH OR THE GUM INSTEAD OF INHALING THE NICOTINE?

A. WELL, THIS IS REALLY AN IMPORTANT POINT TO UNDERSTAND WHY SMOKING, IN PARTICULAR, IS ADDICTING.

IT GOES BACK TO WHAT WE SAID BEFORE, THAT WHEN YOU SMOKE A CIGARETTE, YOU GET A RAPID ABSORPTION OF A HIGH LEVEL OF NICOTINE THAT GOES TO YOUR BRAIN WITHIN SECONDS.

SO IF I WERE TO MAKE A GRAPH, FOR EXAMPLE, I COULD SHOW VERY -- IT WOULD BE LIKE A SPIKE OF NICOTINE IN THE BRAIN.

NICOTINE FROM PATCHES IS ABSORBED OVER HOURS, VERY SLOWLY. NICOTINE FROM GUN IS

1950

ABSORBED OVER 30 MINUTES. SO, AGAIN, THAT'S PRETTY SLOW.

AND THE SAME THING FROM THE NICOTINE PUFFER, INHALER AND NICOTINE LOZENGES, THE ABSORPTION IS SLOW AND THE EFFECTS OF NICOTINE ARE MUCH DIFFERENT.

SO THE SMOKER DOESN'T GET THE SATISFACTION OF TAKING A PUFF OF A CIGARETTE. THEY DO GET RELIEF OF WITHDRAWAL SYMPTOMS. BUT A SMOKER WILL SAY IT'S JUST NOT THE SAME THING BECAUSE THEY ARE NOT GETTING THE SAME RAPID HIGH LEVEL DOSE REINFORCEMENT.

Q. SO TO JUMP BACK TO AN ANALOGY -- TO JUMP BACK TO AN EXAMPLE YOU GAVE, I'D LIKE TO MAKE AN ANALOGY. TELL ME IF THIS IS RIGHT OR WRONG. EARLIER YOU TOLD THE JURY THAT SMOKING CRACK COCAINE IS MORE ADDICTIVE BECAUSE THERE'S A MORE INSTANTANEOUS HIT BECAUSE YOU ARE INHALING IT OR SNORTING IT OR EATING IT OR SOMETHING. AND IS THAT

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WHAT WE ARE TALKING ABOUT AGAIN NOW, BUT BECAUSE THE TOBACCO IS BEING INHALED AND GOING STRAIGHT TO THE BRAIN, IT'S JUST DIFFERENT, MORE ADDICTIVE THAN USING A PATCH OR CHEWING SOME GUM?

A. IT'S EXACTLY THE SAME ISSUE.

Q. SO ANYWAY, BACK TO THE NEWSPAPER ON THE 15TH OF APRIL, 1994, PHILIP MORRIS SAID IT DIDN'T BELIEVE SMOKING WAS -- CIGARETTE SMOKING WAS ADDICTIVE AND QUOTED, SORT OF SIDEWAYS, THE SURGEON

1951

GENERAL'S REPORT OF 1988.

MR. CARLTON: OBJECTION TO THE COMMENT.

THE COURT: "SIDEWAYS."

MR. PIUZE: I WILL WITHDRAW THE QUESTION AND I WILL DO IT DIFFERENTLY.

THE COURT: THANK YOU.

Q BY MR. PIUZE: PHILIP MORRIS TOLD WHOEVER WAS READING THE "NEW YORK TIMES" ON APRIL 15, 1994 THAT IT DID NOT BELIEVE CIGARETTE SMOKING WAS ADDICTIVE AND SEEMINGLY BASED ITS STATEMENTS, IN PART, ON THE 1988 SURGEON GENERAL'S REPORT, OR AT LEAST TO ME --

THE COURT: SIR, DO YOU AGREE WITH THAT ASSESSMENT?

THE WITNESS: WELL, THEY CERTAINLY CITE SOME DATA FROM THE REPORT. ALTHOUGH THE REPORT DID NOT CONCLUDE THAT IT WAS NOT ADDICTIVE.

Q BY MR. PIUZE: THAT'S WHERE MY QUESTION WAS GOING.

IF PHILIP MORRIS HAD QUOTED FROM THE SURGEON GENERAL'S REPORT OF 1988 ON THE ISSUE OF WHETHER OR NOT CIGARETTE SMOKING WAS ADDICTIVE, IT WOULD HAVE HAD TO HAVE SAID YES.

A. IT WOULD HAVE SAID CIGARETTE SMOKING IS ADDICTIVE. NICOTINE IS THE DRUG THAT IS RESPONSIBLE FOR THAT ADDICTION.

Q. SO IF PHILIP MORRIS, ON APRIL 15, 1994, IN THE "NEW YORK TIMES," HAD TRULY QUOTED OUT

1952

OF THE SURGEON GENERAL'S REPORT ON WHETHER CIGARETTE SMOKING WAS AND WHETHER NICOTINE WAS ADDICTIVE, IT NECESSARILY, IF IT REALLY QUOTED OUT OF THE SURGEON GENERAL'S REPORT, WOULD HAVE HAD TO HAVE DISAGREED WITH ITS OWN CHIEF EXECUTIVES TESTIFYING BEFORE CONGRESS THE DAY BEFORE?

MR. CARLTON: OBJECTION, LEADING.

THE COURT: ARGUMENTATIVE.

Q BY MR. PIUZE: I'D LIKE TO SHOW YOU EXHIBIT 3.00, WHICH IS A 1972 DOCUMENT ENTITLED "MOTIVES AND INCENTIVES IN CIGARETTE SMOKING."

AND I WILL JUST SHOW YOU THE FIRST PAGE HERE, AND APOLOGIZE FOR THE QUALITY.

DO YOU SEE THE AUTHOR, WILLIAM DUNN, JUNIOR, PHILIP MORRIS RESEARCH CENTER, RICHMOND, VIRGINIA.

CAN YOU MAKE THAT OUT?

A. YES.

Q. YOU ARE FAMILIAR WITH THIS DOCUMENT?

A. YES.

Q. THIS DOCUMENT DISCUSSES, IN PART,

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THE SAINT MARTIN'S CONFERENCE?
A. YES.
Q. DO YOU KNOW WHAT THE SAINT MARTIN'S CONFERENCE WAS?
A. WELL, THIS WAS A CONFERENCE ON SMOKING, I THINK, BEHAVIOR RELATED ISSUES THAT

1953

INVOLVED THE TOBACCO INDUSTRY AND SOME SELECTED SCIENTISTS FROM MEDICAL SCHOOLS AND OTHER PLACES.
Q. AND DRAWING YOUR ATTENTION TO THE UNDERLINED, THE HIGHLIGHTED STUFF IN YELLOW, AGAIN, I WILL READ IT OUT LOUD AND THEN I WILL ASK YOU ABOUT IT.
"AS WITH EATING AND COPULATING, SO IT IS WITH SMOKING. THE PHYSIOLOGICAL EFFECTS SERVES AS THE PRIMARY INCENTIVE; ALL OTHER INCENTIVES ARE SECONDARY. THE MAJORITY OF THE CONFEREES WOULD GO EVEN FURTHER AND ACCEPT THE PROPOSITION THAT NICOTINE IS THE ACTIVE CONSTITUENT OF CIGARETTE SMOKE. WITHOUT NICOTINE, THE ARGUMENT GOES, THERE WOULD BE NO SMOKING. SOME STRONG EVIDENCE CAN BE MARTIALLED TO SUPPORT THIS ARGUMENT.
"ONE, NO ONE HAS EVER BECOME A CIGARETTE SMOKER BY SMOKING CIGARETTES WITHOUT NICOTINE.
"TWO, MOST OF THE PHYSIOLOGICAL RESPONSES TO INHALED SMOKE HAVE BEEN SHOWN TO BE NICOTINE-RELATED.
"THREE, DESPITE MANY LOW NICOTINE BRAND ENTRIES INTO THE

1954

MARKETPLACE, NONE OF THEM HAVE CAPTURED A SUBSTANTIAL SEGMENT OF THE MARKET."
Q BY MR. PIUZE: NOW, IS THERE ANYTHING THERE THAT I READ THAT'S HIGHLIGHTED FOR THE JURY TO SHOW YOU WITH WHICH YOU DISAGREE OR IS THAT ALL RIGHT?
A. NO. THIS MAKES IT VERY CLEAR THAT DR. DUNN, AND I THINK THE OTHER TOBACCO SCIENTISTS, UNDERSTOOD THAT PEOPLE SMOKE CIGARETTES TO GET NICOTINE.
SO -- AND NICOTINE IS REQUIRED FOR SMOKING. PEOPLE DON'T SMOKE WITHOUT IT. AND IT'S THE EFFECTS OF NICOTINE THAT PEOPLE ARE SEEKING WHEN THEY USE TOBACCO.
Q. THANK YOU.
I AM GOING TO FLIP THE PAGE. THIS IS PAGE 5.
"WHY THEN IS THERE NOT A MARKET FOR NICOTINE, PER SE, TO BE EATEN, SUCKED, DRUNK, INJECTED, INSERTED OR INHALED AS A PURE AEROSOL? THE ANSWER, AND I FEEL QUITE STRONGLY ABOUT THIS, IS THAT THE CIGARETTE IS, IN FACT, AMONG THE MOST AWE-INSPIRING

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EXAMPLES OF THE INGENUITY OF MAN. LET ME EXPLAIN MY CONVICTION.

"THE CIGARETTE SHOULD BE

1955

CONCEIVED NOT AS A PRODUCT BUT AS A PACKAGE. THE PRODUCT IS NICOTINE. THE CIGARETTE IS BUT ONE OF MANY PACKAGED LAYERS. THERE IS THE CARTON WHICH CONTAINS THE PACK, WHICH CONTAINS THE CIGARETTE, WHICH CONTAINS THE SMOKE. THE SMOKE IS THE FINAL PACKAGE. THE SMOKER MUST STRIP OFF ALL THESE PACKAGE LAYERS TO GET TO THAT WHICH HE SEEKS."

SO LET ME STOP THERE AGAIN. YOU AGREE WITH ALL THAT SO FAR?

A. YES. THIS PART OF THE DOCUMENT IS JUST RESTATING THE IDEA THAT CIGARETTES ARE DRUG DELIVERY DEVICES AND THAT THIS IS THEIR CHARACTERIZATION OF HOW A CIGARETTE IS A DRUG DELIVERY DEVICE.

Q. (READING)

"THINK OF THE CIGARETTE PACK AS A STORAGE CONTAINER FOR A DAY'S SUPPLY OF NICOTINE. THINK OF THE CIGARETTE AS A DISPENSER FOR A DOSE UNIT OF NICOTINE."

AND THAT, AGAIN, IS WHAT YOU JUST FINISHED SAYING?

A. YES.

Q. SO YOU AGREE WITH THAT?

A. YES.

1956

Q. PAGE 6.

"THINK OF A PUFF OF SMOKE AS THE VEHICLE OF NICOTINE. SMOKE IS BEYOND QUESTION THE MOST OPTIMIZED VEHICLE OF NICOTINE AND THE CIGARETTE THE MOST OPTIMIZED DISPENSER OF THE SMOKE."

SO THE SAME THING ALL OVER AGAIN?

A. YES.

Q. SO THAT'S 72.

LET ME SHOW YOU A DOCUMENT NUMBER 421. AND I WILL SHOW YOU THE FACE PAGE FIRST.

* (EXHIBIT 421, ARTICLE, MARKED FOR I.D.)

Q BY MR. PIUZE: AND I DRAW YOUR ATTENTION TO THE FACT THAT, (A), IT'S A PHILIP MORRIS U.S.A. INTER-OFFICE MEMO; (B), THE DATE IS JUNE 2, 1976.

AND THE NAMES HERE IS, MR. J. J. MORGAN, THAT'S WHO IT IS TO; MR. AL UDOW, U-D-O-W, THAT'S WHO IT IS FROM, AND THE SUBJECT OF THIS MEMO IS "WHY PEOPLE START TO SMOKE."

I AM GOING TO SHOW YOU PAGE 3 NOW OF THE HIGHLIGHTED PARAGRAPH.

"FOR PERSONS WHO ARE SELF-CONSCIOUS AND INSECURE, SMOKING

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1957

PROVIDES AN ACTIVITY AND SOMETHING TO DO WITH THEIR HANDS THAT TAKES THEIR MINDS OFF THEMSELVES. MANY ACCEPT THE IMAGE CREATED BY CIGARETTE ADVERTISEMENTS OF CIGARETTE SMOKING AS A SYMBOL OF POISE, SELF-CONFIDENCE AND SOCIAL SUCCESS. BUT ONCE ONE BECOMES DEPENDENT UPON CIGARETTES, HABITUATION OR ADDICTION ARE IMPELLING DRIVES TO CONTINUE."

AND I WANT TO TALK ABOUT THE WORDS "DEPENDENT," "HABITUATION" AND "ADDICTION."

LET ME READ THE SENTENCE ONE MORE TIME.

"BUT ONCE ONE BECOMES DEPENDENT ON CIGARETTES, HABITUATION OR ADDICTION ARE IMPELLING DRIVES TO CONTINUE."

Q. YOU HAVE TOLD US ABOUT ADDICTION. WHAT'S HABITUATION?

A. WELL, THAT GETS BACK TO THE 1964 SURGEON GENERAL'S REPORT, THE FIRST REPORT ON SMOKING AND HEALTH.

AT THAT TIME, THE WORLD HEALTH ORGANIZATION HAD SOME DEFINITIONS FOR HABITUATION AND ADDICTION.

TO BE ADDICTING, A DRUG HAD TO BE INTOXICATING. IT HAD TO HAVE A VERY SEVERE

1958

WITHDRAWAL SYNDROME AND IT HAD TO BE ASSOCIATED WITH SOCIETAL INJURY, SO HARM TO SOCIETY, THINGS LIKE CRIMINALITY, ET CETERA.

IT WAS CLEAR THEN, AS IT IS CLEAR NOW, THAT PEOPLE SMOKE CIGARETTES FOR NICOTINE AND THAT IT WAS EXTREMELY DIFFICULTY TO QUIT, AND THAT MANY PEOPLE COULDN'T QUIT OR WENT TO EXTREME ENDS TO TRY TO GET HELP TO QUIT.

BUT BECAUSE NICOTINE WAS NOT INTOXICATING, AND WASN'T AN ANTI-SOCIAL BEHAVIOR, THE SURGEON GENERAL CALLED IT AN HABITUATION.

NOW, WHAT HAPPENED AFTERWARDS, IN THE NEXT YEAR, 1965, THE WORLD HEALTH ORGANIZATION CANNED THAT DEFINITION. THEY SAID IT WASN'T ACCURATE BECAUSE IT REALLY DIDN'T DESCRIBE THE TRUE NATURE OF THE COMPULSION TO USE DRUGS.

AND THAT DEFINITION DIDN'T WORK FOR DRUGS LIKE COCAINE, BECAUSE COCAINE IS IN ASSOCIATION WITH A SEVERE WITHDRAWAL SYNDROME.

SO IN 1965, THE WORLD HEALTH ORGANIZATION CAME UP WITH ANOTHER DEFINITION AND GOT RID OF THE TERMS "HABITUATION" AND "ADDICTION" BUT FOCUSED ON "DEPENDENCE" AS ENCOMPASSING BOTH AND SAYING IT WAS MORE THAT A BEHAVIORAL PATTERN SUCH THAT WHEN A GIVEN PSYCHIATRIC DRUG IS USED, IT'S GIVEN SHARPLY HIGHER PRIORITIES OVER OTHER BEHAVIORS THAT ONCE HAD A HIGH PRIORITY FOR THAT PERSON. WHICH MEANS YOU START USING DRUGS TO THE

1959

EXCLUSION OF OTHER THINGS THAT ARE IMPORTANT TO

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YOU, YOUR HEALTH OR MONEY OR WHATEVER.
SO THAT WAS IN 1965. AND SUBSEQUENT SURGEON GENERAL'S REPORTS FOCUS MOSTLY ON DEPENDENCE.
IN 1988 WE DECIDED THAT DEPENDENCE AND ADDICTION WERE REALLY SIMILAR AND THAT ADDICTION WAS UNDERSTOOD BY MANY PEOPLE BETTER IN THE SENSE OF COMPULSIVE USE OF A DRUG. AND SO WE WOULD USE BOTH TERMS TOGETHER. WE WOULD SAY ADDICTION, WHICH IS THE SAME AS DEPENDENCE, BUT ADDICTION IMPLYING THAT ONCE YOU START USING A DRUG, IT'S OFTEN VERY DIFFICULT TO QUIT.
Q. IN YOUR SCIENTIFIC WRITINGS, WHEN YOU USE TERMS LIKE -- LET ME JUST GET THIS STRAIGHT HERE, ADDICTION AND DEPENDENCE, DO YOU USE THOSE TWO TERMS INTERCHANGEABLY?
A. YES.
Q. OR ARE THEY DIFFERENT?
A. NO. I USE THOSE TERMS INTERCHANGEABLY AND MANY OTHER SCIENTISTS DO. SOME SCIENTISTS DON'T LIKE ADDICTION BECAUSE THEY THINK IT REMINDS PEOPLE OF ILLEGAL DRUGS AND CRIMINALITY.
BUT MANY SCIENTISTS DO USE IT THE WAY I DO, JUST RELATING TO, BASICALLY, A LOSS OF CONTROL OVER DRUG USE.
Q. SAME QUESTION ABOUT HABITUATION. NOW, THIS WRITER USES A -- APPARENTLY USED THESE

1960

TWO TERMS INTERCHANGEABLY, HABITUATION OR ADDICTION.
AND WHEN YOU WRITE IN SCIENTIFIC WRITINGS, DO YOU USE THOSE TWO TERMS INTERCHANGEABLY?
A. HARDLY ANYONE, I CAN'T THINK OF ANYONE IN RECENT TIMES WHO HAS USED "HABITUATION." THAT WAS A TERM THAT WAS DEVELOPED, AS I SAID, BY THE WORLD HEALTH ORGANIZATION IN 1957 AND REALLY SETS UP A DISTINCTION BETWEEN THAT AND ADDICTION. THAT DOESN'T MAKE PHYSIOLOGICAL SENSE. SO IT IS NOT USED ANY MORE.
Q. HERE'S THE BOTTOM LINE TO WHERE I WAS GOING. OUT OF THIS PHILIP MORRIS DOCUMENT IN 1976, WHERE THIS MAN SAYS "ONCE ONE BECOMES DEPENDENT UPON CIGARETTES, HABITUATION OR ADDICTION ARE IMPELLING DRIVES TO CONTINUE." THAT STATEMENT IS TOTALLY AT ODDS WITH WHAT CAME 18 YEARS LATER FROM THE CHIEF EXECUTIVE OFFICER, IS IT NOT?
A. YES. CERTAINLY IT IS MISLEADING BECAUSE EVEN IF ONE WANTS TO ARGUE THE DEFINITIONS, THAT ADDICTION MUST MEAN INTOXICATION, I THINK IT'S MISLEADING TO TELL PEOPLE IT'S NOT ADDICTING. BECAUSE MOST PEOPLE, WHEN THEY THINK OF ADDICTING, DON'T NECESSARILY THINK OF INTOXICATING. THEY THINK ADDICTING MEANS THAT'S HARD TO QUIT.
AND SCIENTISTS HAVE KNOWN THAT, TOBACCO INDUSTRY HAS KNOWN, THE DOCUMENTS WELL

1961

DOCUMENT THAT PEOPLE SMOKE FOR NICOTINE AND THEY HAVE A HARD TIME QUITTING. AND THAT WAS NOT AT ALL CONVEYED IN THAT ADVERTISEMENT IN 1995.
Q. 4?

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A. 4, EXCUSE ME.
Q. OKAY. ONE MORE PAGE OUT OF THIS AND I HAVE ONE MORE DOCUMENT AFTERWARD.
THIS IS PAGE 7:
"ON DEEPER PROBING, THE CIRCUMSTANCES IN WHICH SMOKING OCCURS MAY BE GENERALIZED AS FOLLOWS:
"ONE, AS A NARCOTIC, TRANQUILIZER, OR SEDATIVE. SMOKERS REGULARLY USE CIGARETTES AT TIMES OF STRESS."
IT ALMOST SOUNDS LIKE YOU WERE READING OFF OF THIS IN SOME OF YOUR EARLIER TESTIMONY.
A. YES. I THINK IT'S STRIKING BECAUSE PEOPLE SOMETIMES DON'T APPRECIATE THAT NICOTINE CAN BE A -- CAN BE DIFFERENT THINGS. IT CAN HAVE NARCOTIC TYPE AFFECTS. IT CAN HAVE TRANQUILIZING EFFECTS, SEDATION, AND IS USED IN STRESS.
THIS IS INFORMATION THAT HAS BEEN WELL-KNOWN TO SCIENTISTS AND TO THE INDUSTRY FOR MANY YEARS.
Q. MANY YEARS, WE ARE TALKING GOING BACK, THIS IS 1976?

1962

A. YES.
Q. AND BEFORE?
A. AND BEFORE.
Q. HERE'S A LAST DOCUMENT. THIS IS 1980, AND THE'S DOCUMENT NUMBER 423.00.
FIRST PAGE SHOWS, IT'S PHILIP MORRIS U.S.A., IT'S 1980, IT'S TO DR. SELIGMAN FROM W.L. DUNN, AND THE SUBJECT IS THE NICOTINE RECEPTOR PROGRAM.
AND I'D LIKE TO READ WHAT IS HIGHLIGHTED HERE IN YELLOW AND DISCUSS IT WITH YOU AGAIN.
"THE PSYCHOPHARMACOLOGY OF NICOTINE IS A HIGHLY VEXATIOUS TOPIC. IT IS WHERE THE ACTION IS FOR THOSE DOING FUNDAMENTAL RESEARCH ON SMOKING, AND FROM WHERE MOST LIKELY WILL COME SIGNIFICANT SCIENTIFIC DEVELOPMENTS PROFOUNDLY INFLUENCING THE INDUSTRY. YET IT IS WHERE OUR ATTORNEYS LEAST WANT US TO BE, FOR TWO REASONS. IT IS IMPORTANT TO HAVE THESE TWO REASONS EXPRESSED AND DISTINGUISHED FROM ONE ANOTHER. THE FIRST REASON IS THE OLDEST AND IS IMPLICIT IN THE LEGAL STRATEGY EMPLOYED OVER THE YEARS IN DEFENDING CORPORATIONS WITHIN THE INDUSTRY FROM THE CLAIMS OF HEIRS AND

1963

ESTATES OF DECEASED SMOKERS: WE, WITHIN THE INDUSTRY -- " NOW, THIS IS PART OF A QUOTE, I HAVEN'T HIGHLIGHTED THE WHOLE THING. "WE, WITHIN THE INDUSTRY, ARE IGNORANT OF ANY RELATIONSHIP BETWEEN SMOKING AND DISEASE."

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AND IN THE SECOND PART THAT I HAVE HIGHLIGHTED.

"WE ARE NOW BEING ALLOWED TO CONDUCT RESEARCH ON THE IMMEDIATE EFFECTS OF NICOTINE BECAUSE OF THIS DISTINCTION. WE CAN WORK WITH BIOLOGICAL SYSTEMS IMPLANTING -- EXCUSE ME -- WE CAN INJECT NICOTINE IN RATS AND WE CAN PERFORM THE SURGERY REQUIRED FOR IMPLANTING CANNULA. BUT IN DOING SO, WE ARE ENGAGING IN RESEARCH ON THE PHARMACOLOGICAL ACTION OF NICOTINE, WHICH BRINGS US TO THE SECOND CONCERN OF OUR ATTORNEYS, THIS IS A MORE RECENT CONCERN ARISING FROM INCREASINGLY FAVORABLE PROSPECTS FOR THE SUCCESS OF A LEGISLATIVE EFFORT TO TRANSFER AUTHORITY FOR THE REGULATION OF TOBACCO MANUFACTURE TO A FEDERAL AGENCY, F.D.A., KNOWN TO HAVE INTERESTS AND POWERS ANTITHETICAL TO

1964

THE INTERESTS OF THE INDUSTRY. ANY ACTION ON OUR PART, SUCH AS RESEARCH ON THE PSYCHOPHARMACOLOGY OF NICOTINE, WHICH IMPLICITLY OR EXPLICITLY TREATS NICOTINE AS A DRUG, COULD WELL BE VIEWED AS A TACIT ACKNOWLEDGMENT THAT NICOTINE IS A DRUG."

DO YOU HAVE AN OPINION THAT NICOTINE IS A DRUG?

A. YES, IT IS A DRUG.

Q. THERE'S A COPY OF THIS. IT'S SIGNED BY MR. DUNN. THERE IS A COPY TO T.S. OSDENE, T.S.O.

NOW, AS A RESULT OF READING THESE WORDS HERE, THE TOPIC THAT I AM DISCUSSING WITH YOU IS, WAY BEFORE APRIL 15, 1994, DID PHILIP MORRIS KNOW NICOTINE WAS ADDICTIVE, AND DOES THIS, DOES THIS DOCUMENT THAT I JUST READ TO YOU, IS IT SIGNIFICANT TO YOU IN ANSWERING THAT QUESTION?

A. YES.

Q. WHY?

A. WELL, DR. DUNN RESTATES, WHAT I HAVE TALKED ABOUT ALREADY, THAT TO UNDERSTAND SMOKING, AND TO UNDERSTAND THE BUSINESS OF SELLING TOBACCO, YOU HAVE TO UNDERSTAND THE PSYCHOACTIVITY OF NICOTINE, WHICH IS WHAT IT DOES TO BEHAVIOR AND MOOD.

HE EXPRESSES SOME OF THE

1965

FRUSTRATION WITH DOING IT BECAUSE OF THE INDUSTRY'S CONCERN THAT IF THEY DO ANY RESEARCH, THE INDUSTRY CAN'T CLAIM IGNORANCE OF HARM.

MR. CARLTON: OBJECTION, YOUR HONOR, TO A STATEMENT OF INTENT.

THE COURT: AGREED, SUSTAINED.

THE WITNESS: WHAT WAS STATED WAS THAT ONE OF THE RISKS OF DOING RESEARCH IS THAT WE CAN'T OR OUR ATTORNEYS CAN'T --

MR. CARLTON: OBJECTION, YOUR HONOR, THAT

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MISCHARACTERIZES THE DOCUMENT.
THE COURT: SUSTAINED.
Q BY MR. PIUZE: I WILL TELL YOU WHAT, THE JURY -- THAT WASN'T EXACTLY WHAT I WAS GOING FOR.
A. OKAY.
Q. THE JURY CAN --
THE COURT: JUST ANSWER HIS QUESTION.
Q BY MR. PIUZE: I AM GOING TO ASK A BETTER QUESTION. IT'S MY FAULT.
A. SORRY.
Q. ALMOST 12:00. MY EYE'S ON THE CLOCK, PROBABLY OTHERS ARE, AND I ASKED A CRUMMY QUESTION.
THE JURY CAN READ WHAT THE WORDS SAY.
WE ARE TALKING PSYCHOPHARMACOLOGY AND ALL THIS STUFF IN HERE THAT IS YOUR FIELD, ONE

1966

OF YOUR FIELDS. DOES THE USE OF THESE WORDS IN HERE, IN THIS CONTEXT, TELL YOU THAT IT WAS UNDERSTOOD HERE THAT NICOTINE IS ADDICTIVE?
MR. CARLTON: OBJECTION, YOUR HONOR.
THE COURT: SUSTAINED.
MR. PIUZE: OKAY, THEN, THAT PROBABLY --
THE COURT: HE CAN TESTIFY AS TO HIS UNDERSTANDING OF THOSE WORDS. BUT HE CAN'T TELL US WHAT SOMEBODY ELSE WHO WROTE THE DOCUMENT INTENDED.
MR. PIUZE: THANK YOU.
THE COURT: FAIR ENOUGH.
MR. PIUZE: LIFE LINE.
Q BY MR. PIUZE: WHAT IS YOUR UNDERSTANDING OF THOSE WORDS?
A. MY UNDERSTANDING IS THAT NICOTINE IS WHAT MAINTAINS SMOKING. IT'S PSYCHOACTIVE. AND THAT IF -- AND IF ONE -- WELL, AND THAT DR. DUNN UNDERSTOOD --
MR. CARLTON: OBJECTION.
THE COURT: SUSTAINED.
THE WITNESS: OR --
THE COURT: SIR, WE DON'T WANT YOU TESTIFYING AS TO WHAT SOMEBODY ELSE UNDERSTOOD.
THE WITNESS: WELL, THAT NICOTINE IS A DRUG, NO MATTER WHAT THE CONCERNS OF ATTORNEYS OR WHATEVER, THAT NICOTINE IS A DRUG AND THAT'S WHAT HE STATED.
MR. PIUZE: OKAY. THANK YOU.

1967

YOUR HONOR, I'D LIKE TO DONATE THE NEXT 13 SECONDS TO THE JURY.
THE COURT: WELL, ALL RIGHT. THANK YOU VERY MUCH.
LADIES AND GENTLEMEN OF THE JURY, IT'S TIME NOW TO TAKE OUR NOON BREAK.
WE WILL BE BACK AT 1:30 THIS AFTERNOON. DON'T DISCUSS THE CASE WITH ANYONE.
SIR, YOU MAY STEP DOWN.

(AT 12 NOON, THE LUNCH RECESS WAS TAKEN TO 1:30 P.M. OF THE SAME DAY.)

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